US Army Corps
of Engineers
New Orleans District
Mississippi Valley Division

Port of Iberia, Louisiana

Final Feasibility Report

OCTOBER 2006

Volume 1:
Main Report
Environmental Impact Statement

REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
NEW ORLEANS DISTRICT, CORPS OF ENGINEERS
P.O. BOX 60267
NEW ORLEANS, LOUISIANA 70160-0267

PORT OF IBERIA, LOUISIANA
FINAL FEASIBILITY REPORT

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Addendum to the Main Report

Port of Iberia, Louisiana
Final Feasibility Report

Note: This addendum supersedes the findings of the enclosed Final Feasibility Report and Environmental Impact Statement (EIS) dated April 2006. The revised recommendation described in this addendum has resulted through subsequent economic evaluations.

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Port of Iberia, Louisiana
Addendum to the Main Report
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1. PURPOSE

The purpose of this Addendum is to describe the rationale for a 16-foot channel plan recommendation at Port of Iberia, Louisiana. The final recommendation represents a change from the plan identified in the previously circulated Port of Iberia, Louisiana Draft Feasibility Report and Environmental Impact Statement (EIS), dated August 2005, and subsequent coordination leading to preparation of a Final Feasibility Report and EIS dated April 2006. Prior to approving the release of the Final Report for legislated State and Agency review and filing of the final EIS, Corps of Engineers leadership directed Mississippi Valley Division (MVD) to expand the rationale supporting its 20-foot channel recommendation. After careful consideration of the additional information, Corps leadership ultimately determined that a lesser plan, the 16-foot channel, was supportable at this time. The recommended plan 16-foot channel plan includes features that are expandable, should future conditions warrant further deepening to 20 feet. The basis for the 16-foot channel plan recommendation is described in more detail in the following paragraphs.

2. AUTHORITY

This addendum was prepared as a part of the feasibility study which was authorized by Section 431 of the Water Resources Development Act of 2000, Public Law 106-541, dated December 2000.

3. BACKGROUND

The Draft Feasibility Report and EIS, dated August 2005, documented a 20-foot channel plan recommendation for Port of Iberia, Louisiana. Subsequent Washington-level policy review and independent technical review (ITR) identified a number of concerns with the analysis and recommendation. In response to review concerns, significant revisions were made to the economic evaluation. A scenario analysis was incorporated to address the uncertainties associated with the key underlying assumptions – market share, future competition, and topside size. The plan selection would be indicated by performance across all scenarios. A final version of the feasibility report and EIS was prepared in April 2006, recommending a 20-foot channel plan on the basis of a scenario analysis. A total of 24 scenarios were evaluated, reflecting three distinct Gulf of Mexico (GOM) topside forecasts and differing assumptions of foreign and domestic competition, type of contracts, platform integration, and staging (see Appendix A for a detailed description and analysis of the scenarios).

The results of the scenario analysis displaying the average annual net benefits for each of the channel depths analyzed and for each of the market share scenarios are presented in **table MR 4-10** on page MR 4-24 of the main report. Of the 24 scenarios evaluated using maximum net benefits, 10 indicated the 20-foot channel plan was optimal, 4 indicated the 16-foot channel plan was optimal, and the remaining 10 scenarios indicated no deepening was justified. Of the 24 scenarios evaluated using positive net benefits, 14 scenarios indicated positive net benefits for the 20-foot channel plan, 14 scenarios indicated positive net benefits for the 18-foot channel plan, and 14 scenarios indicated positive net benefits for the 16-foot channel plan.

The Headquarters, US Army Corps of Engineers (HQUSACE) Civil Works Review Board (CWRB) reviewed the report. In May 2006, the CWRB directed additional analysis and expanded rationale for the recommended plan. In response to the CWRB's comments, a report was submitted presenting an expanded rational for the recommended 20-foot channel depth. The analysis of the expanded rationale and coordination with HQUSACE led to a conclusion that the recommended plan should be to deepen the Port of Iberia channel to a 16-foot depth.

4. BASIS FOR CHANGING THE RECOMMENDED PLAN

Subsequent to submission of the feasibility report and EIS in April 2006, two important additional pieces of information became available which are relevant to the project analysis and recommendation.

The first new piece of information is regarding the size of the GOM topsides market. Minerals Management Service (MMS) published an update of their GOM deep-water platform forecasts. The updated forecasts by MMS have resulted in some modification of the results presented in the April 2006 feasibility report. Over the entire 50-year forecast period (2012-2061), MMS current forecasts now projects that 73 production platforms would be developed in the Gulf of Mexico using their high projection and 49 platforms using their low projection. This compares to 90 and 56 platforms for the previous MMS high and low forecasts, respectively, used in the April 2006 feasibility report. These current MMS forecasts make use of an updated model that incorporates numerous features that are believed to enhance the model's predictive capability. A key model input is the price of crude oil. The prices assumed in the current forecast were $46 per barrel for the high forecast and $30 per barrel for the low forecast. The revised scenario analysis, incorporating the current MMS forecasts, is presented in **table 1** below.

Table 1
Average Annual Net Benefits
(5.125 interest rate, thousands of dollars)

Scenario	Infield GOM Market		MMS High GOM Market		MMS Low GOM Market	
Competition	No Increased Competition	Increased Competition	No Increased Competition	Increased Competition	No Increased Competition	Increased Competition
16 Foot Channel	3,274	1,599	7,430	5,272	1,335	(114)
18 Foot Channel	2,982	1,530	7,541	5,670	855	(401)
20 Foot Channel	4,702	1,965	10,371	6,846	2,056	(312)
20 Percent EPC						
16 Foot Channel	371	(969)	3,689	1,962	(1,178)	(2,337)
18 Foot Channel	302	(1,373)	4,087	1,929	(1,464)	(2,914)
20 Foot Channel	793	(1,441)	5,335	2,457	(1,327)	(3,260)
50 Percent Integration						
16 Foot Channel	(634)	(1,751)	2,394	955	(2,047)	(3,014)
18 Foot Channel	(1,485)	(2,825)	1,785	58	(3,011)	(4,170)
20 Foot Channel	(2,334)	(3,898)	1,306	(708)	(4,033)	(5,386)
Staging						
16 Foot Channel	(2,198)	(3,147)	379	(844)	(3,400)	(4,222)
18 Foot Channel	(3,048)	(4,221)	(229)	(1,740)	(4,364)	(5,378)
20 Foot Channel	(3,898)	(5,293)	(708)	(2,507)	(5,386)	(6,594)

Note: The market share effects are sequential and cumulative rather than independent of each other.

Of the 24 scenarios evaluated using the updated MMS forecasts and maximum net benefits, 8 indicated the 20-foot channel plan was optimal, 3 indicated the 16-foot channel plan was optimal, and the remaining 13 scenarios indicated no deepening was justified. Of the 24 scenarios evaluated using the updated MMS forecasts and positive net benefits, 9 scenarios indicated positive net benefits for the 20-foot channel plan, 10 scenarios indicated positive net benefits for the 18-foot channel plan, and 11 scenarios indicated positive net benefits for the 16-foot channel plan. Given the substantive uncertainties that exist with regards to projecting market conditions and the associated share of the business the Port of Iberia may garner over the next 50 years, Corps leadership determined that the scenarios could be used as the basis for initial decision-making for federal investments at the Port of Iberia.

The second new piece of information is regarding the modularization of shipments. The measurement of benefits described in the April 2006 feasibility report was predicated on the assumption that a single barge will be required to transport very large topsides. Industry preference is that the entire topside structure (fabricated and add-on pieces) be transported on one barge to the integration site. Therefore, the analysis described in the feasibility report assumed that single barge transport would be the most likely future alternative and would continue throughout the period of analysis. However, subsequent to submission of the feasibility report, the split shipment (two barges) possibility was researched through a series of interviews and no information to preclude the engineering feasibility of moving large topsides on multiple barges was offered. The largest units – 12,000 to 15,000-ton deepwater topsides

fabricated for floating production storage and offloading (FPSO) and floating production systems (FPS) -- are comprised of distinct modules, which can be transported on two or three separate barges. The topside Thunderhorse floating production system is just one example of separate transport of individual topside modules. Three topsides modules were constructed by J. Ray McDermott (JRM) in Morgan City, Louisiana. The modules included the 5,700-ton gas compression module, 5,140-ton production module and 6,740-ton power generation module, which together at over 17,000 tons represent the type of large topside modules forecast to move on the 20-foot channel plan. The modules were shipped individually on separate barges from JRM's Morgan City facility to another firm's facility in Ingleside, Texas, for attachment to the hull structure.

Use of more than one barge to transport the individual topside modules leads to significant benefit and formulation changes. Allowing for multiple barge tows of topside movements means that all projected benefits will accrue to the 16-foot channel. The larger topsides projected for the GOM market are in the 12,000 to 15,000 ton range. Only 1-2 larger topsides are projected to be fabricated at POI and they are comprised of a 10,000 ton module and 5,000 tons of add-on components. The 16-foot channel will accommodate the 10,000 ton module and therefore the 16-foot channel will accommodate all the contracts that are projected to be constructed by POI fabricators. Incremental benefits of channel depths beyond 16 feet are zero, but there are additional construction costs plus incremental maintenance and thus net benefits will decrease with larger projects.

Table 2 displays the revised average annual net benefits that incorporate the two new pieces of information described above. Net benefits, representing the difference between incremental average annual benefits and incremental average annual costs, were calculated for each alternative channel depth and are displayed in **table 2** by GOM market size and POI market share scenario. The estimates are in 2004 price levels and were annualized using an interest rate of 5.125 percent and a 50-year amortization period. The resulting benefit- to-cost ratios (BCR) are displayed in **table 3**.

As **tables 2 and 3** show, of the 24 possible scenarios, a total of 17 (71 percent of all possible outcomes) are expected to produce positive net benefits and in every one of these outcomes the 16-foot channel alternative produces the highest average annual net benefits and corresponding BCR. The range of average annual net benefits is from a maximum of $14,193,000 to a minimum of $562,000 and the range of BCR is from a maximum of 2.16 to a minimum of 1.05, all for the 71 percent of positive outcomes. Given these results, the 16-foot channel alternative is identified as the NED plan and best meets the Federal Criteria for recommending authorization.

Production in very deep water is still in its infancy. Consequently the specific nature and size of production units is associated with a high degree of uncertainty. This raises the possibility of future topsides larger than currently addressed that could not be accommodated by a 16-foot channel even with multiple barges. Given the uncertainty associated with larger units, individual modules could require more than a 16-foot channel.

As a result, the 16 foot channel deepening plan includes accommodations for a future 20-foot channel. The placement of the bypass-channel flood gates, removals and associated costs, all will accommodate a 20-foot channel. Such an action could avoid costs in the future if a 20-foot channel is deemed appropriate. The added cost to build a bypass-channel floodgate to accommodate a 20-foot channel depth (approximately $3.8 million) is considered a reasonable and prudent accommodation to provide flexibility for this uncertain future. There would be no additional change in the removal costs for a 20-foot channel versus a 16-foot channel. This additional cost to the 16-foot channel plan has been incorporated in the calculation of the estimates shown in **tables 4 and 5**. Any additional channel depth over 16 feet would have to be justified and authorized when deemed viable in the future.

Table 2
Average Annual Net Benefits for Two-Barge Transport
(5.125 interest rate, 2004 price levels, thousands of dollars)

Scenario	Infield GOM Market		MMS High GOM Market		MMS Low GOM Market	
Competition	No Increased Competition	Increased Competition	No Increased Competition	Increased Competition	No Increased Competition	Increased Competition
16 Foot Channel	8,523	5,787	14,193	10,668	5,877	3,510
18 Foot Channel	6,835	4,099	12,505	8,979	4,189	1,821
20 Foot Channel	4,702	1,965	10,371	6,846	2,056	(312)
20 Percent EPC						
16 Foot Channel	4,615	2,381	9,157	6,279	2,495	562
18 Foot Channel	2,926	693	7,469	4,591	807	(1,126)
20 Foot Channel	793	(1,441)	5,335	2,457	(1,327)	(3,260)
50 Percent Integration						
16 Foot Channel	1,488	(76)	5,128	3,113	(211)	(1,564)
18 Foot Channel	(200)	(1,764)	3,440	1,425	(1,899)	(3,252)
20 Foot Channel	(2,334)	(3,898)	1,306	(708)	(4,033)	(5,386)
Staging						
16 Foot Channel	(76)	(1,472)	3,113	1,315	(1,564)	(2,772)
18 Foot Channel	(1,764)	(3,160)	1,425	(373)	(3,252)	(4,460)
20 Foot Channel	(3,898)	(5,293)	(708)	(2,507)	(5,386)	(6,594)

Note: The market share effects are sequential and cumulative rather than independent of each other.

Table 3
Benefit to Cost Ratios for Two-Barge Transport
(2004 Price Levels)

Scenario	Infield GOM Market		MMS High GOM Market		MMS Low GOM Market	
Competition	No Increased Competition	Increased Competition	No Increased Competition	Increased Competition	No Increased Competition	Increased Competition
16 Foot Channel	1.70	1.47	2.16	1.87	1.48	1.29
18 Foot Channel	1.49	1.30	1.90	1.65	1.30	1.13
20 Foot Channel	1.29	1.12	1.65	1.43	1.13	0.98
20 Percent EPC						
16 Foot Channel	1.38	1.20	1.75	1.51	1.20	1.05
18 Foot Channel	1.21	1.05	1.54	1.33	1.06	0.92
20 Foot Channel	1.05	0.91	1.33	1.15	0.92	0.80
50 Percent Integration						
16 Foot Channel	1.12	0.99	1.42	1.26	0.98	0.87
18 Foot Channel	0.99	0.87	1.25	1.10	0.86	0.77
20 Foot Channel	0.85	0.76	1.08	0.96	0.75	0.66
Staging						
16 Foot Channel	0.99	0.88	1.26	1.11	0.87	0.77
18 Foot Channel	0.87	0.77	1.10	0.97	0.77	0.68
20 Foot Channel	0.76	0.67	0.96	0.84	0.66	0.59

Note: The market share effects are sequential and cumulative rather than independent of each other.

5. RECOMMENDED PLAN

5.1 Plan Components

The recommended plan would provide for the enlargement of GIWW (20 miles), FWB (18 miles) and bar channel (7.5 miles) and Commercial Canal (7.5 miles), with an additional 7 miles through the Port of Iberia itself. The enlarged channel would provide a 16-foot depth and a 150-foot width. Two new concrete barge floodgates with concrete receiving structures would be constructed for salinity control and navigation – one at each end of the FWB Bypass Channel. The least-cost environmentally acceptable method of enlarging the channels to 16-feet deep and 150-feet wide was developed. Dredged material would be used to reestablish the bank line, create marsh, and nourish the shoreline resulting in net positive environmental impacts. The GIWW and FWB channel bank lines would be stabilized to +3.5-feet NAVD88 and +5-feet NAVD88, respectively, with rock armoring that would settle to +1.4-feet NAVD88 (which corresponds to the adjacent marsh elevation) within 5 years. Removals would be required for impacted facilities including oil and gas pipelines and electrical lines. Private and commercial bulkheads impacted by the channel enlargement would be replaced or modified as appropriate. The recommended plan includes features such as floodgates and other features designed to accommodate a 20-foot navigation depth in the anticipation that channel improvements will be warranted in the future.

The first cost to construct the project, is estimated to be $163,311,676, which includes dredging costs, rock dike construction costs, swing barge installation costs, real estate acquisition costs, and pipeline relocation costs. The OMRR&R for the recommended plan is estimated at $2,965,000, with the OMRR&R on the existing channel estimated at $1,121,400, resulting in the net average annual cost of OMRR&R at $1,843,000, including the OMRR&R for the 20-foot floodgates. Federal and non-Federal project costs are provided below in **table 4** at 2004 price levels and **table 5** at 2005 price levels.

Table 4
Apportionment of Costs of Recommended Plan
(2004 Price Levels)

ITEM	FEDERAL	NON-FEDERAL	TOTAL
GENERAL NAVIGATION FACILITIES (GNF)			
Lands and Damages	$73,800	$8,200	$82,000
Dredging, Commercial Canal	$5,851,984	$650,220	$6,502,204
Dredging GIWW	$13,031,503	$1,447,945	$14,479,448
Dredging Freshwater Bayou Interior	$46,355,021	$5,150,558	$51,505,579
Dredging Freshwater Bayou Bar and Bypass Channels	$5,993,839	$665,982	$6,659,821
Bypass Channel Floodgates	$23,770,266	$2,641,141	$26,411,407
Planning, Engineering and Design	$5,320,032	$591,115	$5,911,147
Construction Management	$5,329,326	$592,147	$5,921,473
Subtotal			$117,473,079
TOTAL GNF COST DURING CONSTRUCTION	$105,725,771	$11,747,308	$117,473,079
LERRD (for GNF)			
Lands, Easements, and Rights-of-Way	$0	$1,613,000	$1,613,000
Relocations	$0	$0	$0
TOTAL LERRD	$0	$1,613,000	$1,613,000
NON-FEDERAL PAYMENT AFTER CONSTRUCTION			
10% of GNF Less Credit for LERRD	($10,134,308)	$10,134,308	
Local Service Facilities	$0	$14,912,344	$14,912,344
REMOVALS	$0	$21,536,506	$21,536,506
TOTAL PROJECT COSTS	$95,591,463	$59,943,466	$155,534,929
TOTAL IMPLEMENTATION COSTS	$105,725,771	$49,809,158	$155,534,929

Note: All costs are for 16-foot channel, except for Bypass Channel Floodgates, Removals, and their associated costs-which are to accommodate a 20-foot channel.

Table 5
Apportionment of Costs of Recommended Plan
(2005Price Levels)

ITEM	FEDERAL	NON-FEDERAL	TOTAL
GENERAL NAVIGATION FACILITIES (GNF)			
Lands and Damages	$77,490	$8,610	$86,100
Dredging, Commercial Canal	$6,144,583	$682,731	$6,827,314
Dredging GIWW	$13,683,078	$1,520,342	$15,203,420
Dredging Freshwater Bayou Interior	$48,672,772	$5,408,086	$54,080,858
Dredging Freshwater Bayou Bar and Bypass Channels	$6,293,531	$699,281	$6,992,812
Bypass Channel Floodgates	$24,958,779	$2,773,198	$27,731,977
Planning, Engineering and Design	$5,586,034	$620,671	$6,206,704
Construction Management	$5,595,793	$621,754	$6,217,547
Subtotal			$123,346,733
TOTAL GNF COST DURING CONSTRUCTION	$111,012,060	$12,334,673	$123,346,733
LERRD (for GNF)			
Lands, Easements, and Rights-of-Way	$0	$1,693,650	$1,693,650
Relocations	$0	$0	$0
TOTAL LERRD	$0	$1,693,650	$1,693,650
NON-FEDERAL PAYMENT AFTER CONSTRUCTION			
10% of GNF Less Credit for LERRD	($10,641,023)	$10,641,023	
Local Service Facilities	$0	$15,657,961	$15,657,961
REMOVALS	$0	$22,613,331	$22,613,331
TOTAL PROJECT COSTS	$100,371,036	$62,940,639	$163,311,676
TOTAL IMPLEMENTATION COSTS	$111,012,060	$52,299,616	$163,311,676

Note: All costs are for 16-foot channel, except for Bypass Channel Floodgates, Removals, and their associated costs-which are to accommodate a 20-foot channel.

5.2 Comparative Impacts of No Action Plan and Recommended Plan to Significant Resources

The Final Environmental Impact Statement and Addendum contain detailed comparisons of the impacts of the No Action Plan and the Recommended Plan. A determination was made that the disposal of dredge material would be formulated to avoid and minimize environmental impacts. The placement sites that were selected for the 16-foot channel (**table EIS 2-3**) are a subset of the placement sites for the 20 foot channel. No impacts have been identified that would require compensatory mitigation.

5.3 Cost Sharing

The first costs of the recommended plan are currently estimated to be $163,311,676. The Federal share during construction would be $111,012,060. The non-Federal sponsor's 10 percent share of general navigation features required during construction would be $12,334,673. In addition, the sponsor would provide LERRD and local service facilities amounting to $1,693,650 and $15,657,961 respectively. For the purpose of this report, all pipeline relocations are non-compensable and thus are removals. The facility owners would be responsible for $22,613,331 for removals. Upon completion of the project, the sponsor would be responsible for a 10 percent payback to the USACE based on the GNF costs, reduced by credit for the non-Federal sponsor's cost of LERRD's. Therefore, the $1,693,650 for real estate would be creditable towards the 10 percent after construction. The resulting payback amount would be $10,641,023 and can be paid over a period of 30 years, with interest. The responsibility for Real Estate efforts (lands, easements, and rights-of-way), pipeline removals, and bulkhead replacements belongs to the non-Federal sponsor.

6. RECOMMENDATION

After reviewing all the significant aspects of this study including the environmental and social effects, the revised economic analyses of alternative plans, the engineering feasibility, and the comments received from other resource agencies, the non-Federal sponsors, and the public, and determining that the recommended plan presented in this addendum is in the overall public interest and a justified expense of Federal funds, it is recommended that the recommended plan presented in the main report be revised to a 16-foot navigable depth. Therefore, I recommend increasing the project dimensions of several channels from the Port of Iberia, Louisiana to the Gulf of Mexico, to 16-feet deep by 150-feet wide, with such modifications thereof as in the discretion of the Commander, HQUSACE, may be advisable. The recommended 16-foot channel plan includes features that are expandable, should future conditions warrant further deepening to 20-feet.

The basis for the revision is that only a small number of the total projected topsides that could be produced at the Port of Iberia would require depths beyond a 16-foot channel depth (under any scenario). These large units –12,000 to 15,000-ton deepwater topsides fabricated for floating production storage and offloading (FPSO) and floating production systems (FPS) -- are comprised of separate modules, which can be transported on two or three separate barges. It has been indicated that use of one barge is a non-negotiable industry requirement; however no data has been presented to substantiate this assertion or verify that the surface area of the design barge is adequate to carry multiple modules with combined weights in excess of 10,000 tons. Use of more than one barge to transport the individual topside modules would allow for accommodation of all projected topsides on the 16-foot channel. In summation, the materials presented do not adequately support the recommendation of a federal investment in a project deeper than 16-feet at this time, providing a significant cost savings to the federal government, both in terms of project cost and O&M.

The channels modified by the recommended plan include the Freshwater Bayou, Freshwater By-Pass, Gulf Intracoastal Waterway and Commercial Canal. The Freshwater Bayou and Gulf

Intracoastal Waterway would continue to be federally maintained. The OMRR&R of the Commercial Canal and FWB By-Pass, including the floodgate structures, would become the responsibility of the Federal Government. The Freshwater Bayou Lock is not affected by the recommended plan and would continue to be maintained by the Federal government.

The first cost is estimated at $163,311,676; with net average annual OMRR&R costs currently estimated at $1,843,000. During construction, the first cost allocated to the Federal government is currently estimated at $111,012,060. The total non-Federal cost-share during construction is estimated to be $52,299,616. In general, the navigation features up to 16-feet are cost shared with 80% of the costs being Federal and 20% of the costs being non-Federal. Also included in the non-Federal share of project costs are the Local Service Facilities, Removals, and LERRDs. The recommended plan produces net excess benefits over costs and a positive benefit to cost ratio. None of these benefits are in accordance with the P&G, but have been measured in accordance with Congressionally mandated language.

I make these recommendations with the provision that, prior to the commencement of construction, the non-Federal sponsor will agree to the following requirements:

a. Enter into an agreement, which provides, prior to execution of the project cooperation agreement, 25 percent of design costs;

b. Provide, during construction, any additional funds needed to cover the non-Federal share of design costs;

c. Provide, during the period of construction, a cash contribution equal to 10% of the total cost of construction of the general navigation features (which include the construction of land-based and aquatic dredged material disposal facilities that are necessary for the disposal of dredged material required for project construction, operation, and maintenance, and, for which a contract for the federal facility's construction or improvement was not awarded on or before October 12, 1996);

d. Construct and maintain, at its own expense, all project features other than those for general navigation, including dredged depths commensurate with those in related general navigation features in berthing areas and local access channels serving the general navigation features;

e. Provide and maintain adequate local service facilities including port facilities and berthing areas open to all on equal terms and provide necessary site development for the regional harbor;

f. Pay with interest, over a period not to exceed 30 years following completion of the period of construction of the project, up to an additional 10 percent of the total cost of construction of the general navigation features. The value of lands, easements, rights-of-way, and relocations provided by the non-Federal sponsor for the general navigation features, described below, may be credited toward this required payment. If the amount of credit exceeds 10 percent of the total cost of construction of the general navigation features, the non-

Federal sponsor shall not be required to make any contribution under this paragraph, nor shall it be entitled to any refund for the value of lands, easements, rights-of-way, and relocations in excess of 10 percent of the total cost of construction of the general navigation features;

g. Accomplish all removals determined necessary by the Federal Government other than those removals specifically assigned to the Federal Government;

h. Provide all lands, easements, rights-of-way, and perform or ensure the performance of all relocations determined by the Federal Government to be necessary for the construction, operation, maintenance, repair, replacement, and rehabilitation of the general navigation features (including all lands, easements, and rights-of-way, and relocations necessary for dredged material disposal facilities);

i. Provide the non-Federal share of that portion of the costs of mitigation and data recovery activities associated with historic preservation, that are in excess of 1 percent of the total amount authorized to be appropriated for the project, in accordance with the cost sharing provisions of the agreement;

j. Do not use Federal funds to meet the non-Federal Sponsor's share of total project costs unless the Federal granting agency verifies in writing that the expenditure of such funds is authorized;

k. Give the Federal Government a right to enter, at reasonable times and in a reasonable manner, upon property that the Non-Federal Sponsor, now or hereafter, owns or controls for access to the project for the purpose of inspecting, operating, maintaining, repairing, replacing, rehabilitating, or completing the project;

l. Hold and save the United States free from all damages arising from the construction and operation, maintenance, repair, replacement, and rehabilitation of the project, any betterments, and the local service facilities, except those damages due to the fault or negligence of the United States or its contractors;

m. Comply with all applicable provisions of the Uniform Relocations Assistance and Real Property Acquisition Policies Act of 1970, Public law 91-646, as amended (42 U.S.C. 4601-4655), and the Uniform Regulations contained in 49 CFR Part 24, in acquiring lands, easements, and rights-of-way necessary for the initial construction, operation and maintenance of the project, including those necessary for relocations, borrow materials, and dredged or excavated material disposal, and inform all affected persons of applicable benefits, policies, and procedures in connection with said Act;

n. Comply with Section 221 of Public Law 91-611, Flood Control Act of 1970, as amended (42 U.S.C. 1962d-5), and Section 103 of the Water Resources Development Act of 1986, Public Law 99-662, as amended (33 U.S.C. 2213), which provides that the Secretary of the Army shall not commence the construction of any water resources project or separable element thereof, until the non-Federal sponsor has entered into a written agreement to furnish its required cooperation for the project or separable element;

o. Perform, or cause to be performed, any investigations for hazardous substances as are determined necessary to identify the existence and extent of any hazardous substances regulated under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Public Law 96-510, as amended (42 U.S.C. 9601-9675), that may exist in, on, or under lands, easements, or rights-of-way that the Federal Government determines to be required for the initial construction, operation, and maintenance of the project. However, for lands that the Federal Government determines to be subject to the navigation servitude, only the Federal Government shall perform such investigations unless the Federal Government provides the Non-Federal Sponsor with prior specific written direction, in which case the Non-Federal Sponsor shall perform such investigations in accordance with such written direction;

p. Assume, as between the Federal Government and the Non-Federal Sponsor, complete financial responsibility for all necessary cleanup and response costs of any CERCLA regulated materials located in, on, or under lands, easements, or rights-of-way that the Federal Government determines to be necessary for the initial construction, operation, or maintenance of the project;

q. To the maximum extent practicable, operate, maintain, and repair the project in a manner that will not cause liability to arise under CERCLA;

r. Keep and maintain books, records, documents, and other evidence pertaining to costs and expenses incurred pursuant to the project, for a minimum of 3 years after completion of the accounting for which such books, records, documents, and other evidence is required, to the extent and in such detail as will properly reflect total costs of construction of the Project, and in accordance with the standards for financial management systems set forth in the Uniform Administrative Requirements for Grants and Cooperative Agreements to State and Local Governments at 32 Code of Federal Regulations (CFR) Section 33.20; and

s. Comply with all applicable Federal and State laws and regulations, including, but not limited to, Section 601 of the Civil Rights Act of 1964, Public Law 88-352 (42 U.S.C. 2000d), and Department of Defense Directive 5500.11 issued pursuant thereto, as well as Army Regulation 600-7, entitled "Nondiscrimination on the Basis of Handicap in Programs and Activities Assisted or Conducted by the Department of the Army", and all applicable Federal labor standards and requirements, including but not limited to 40 U.S.C. 3141 - 3148 and 40 U.S.C. 3701 - 3708 (revising, codifying and enacting without substantial change the provisions of the Davis-Bacon Act (formerly 40 U.S.C. 276a et seq.), the Contract Work Hours and Safety Standards Act(formerly 40 U.S.C. 327 et seq.) and the Copeland Anti-Kickback Act (formerly 40 U.S.C. 276c et seq.).

The recommendation contained herein reflects the information available at this time, 2005 price levels, and current Departmental policies governing the formulation of individual projects. They do not reflect program and budgeting priorities inherent in the formulation of a national civil works construction program, nor the perspective of higher levels of review within

the Executive Branch. Consequently, the recommendation may be modified before they are transmitted to the Congress as proposals for authorization and/or implementation funding.

Richard P. Wagenaar
Colonel, U.S. Army
District Commander

EXHIBIT 1

REVISED LETTER OF INTENT
FROM LADOTD DATED
SEPTEMBER 18, 2006

KATHLEEN BABINEAUX BLANCO
GOVERNOR

STATE OF LOUISIANA
DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
P.O. Box 94245
Baton Rouge, Louisiana 70804-9245
www.dotd.louisiana.gov

JOHNNY B. BRADBERRY
SECRETARY

September 18, 2006

Colonel Richard P. Wagenaar
U.S. Army Corps of Engineers
New Orleans District
Post Office Box 60267
New Orleans, Louisiana 70160-0267

Subject: Port of Iberia, Louisiana Project

Dear Colonel Wagenaar:

This is to advise that the Louisiana Department of Transportation and Development intends to serve as the Local Sponsor for the Port of Iberia, Louisiana (Navigation) Project for the 16 foot channel as recommended by the Civil Works Review Board. But the locally preferred plan is for a 20 foot channel. The State intends to provide all funds necessary to satisfy the total Local Sponsor cost-share requirements of the project. The estimated total cost of the project is $155.5 million with the Federal share at $95.6 million and the local share at $59.9 million.

DOTD intends to acquire the funding from the State Legislature through the sale of general obligation bonds in the State's Capital Outlay Program and/or any other non-federal funding source that may be available. The State has used this mechanism to fund the local cost share of several large scale, multi-year Corps of Engineers' projects before and we feel this will be appropriate for this project.

If you have any questions, please contact Mr. Edmond J. Preau, Jr., Assistant Secretary, Public Works, Hurricane Flood Protection and Intermodal Transportation at (225) 274-4106 or myself.

Sincerely,

Cedric A Grant

for Johnny B. Bradberry
Secretary

cc: Mr. Roy Pontiff
Ms. Sharon J. Balfour

REPORT SUMMARY
Port of Iberia, Louisiana
Final Feasibility Report
April 2006

S.1 STUDY INFORMATION

STUDY AUTHORITY

The Port of Iberia, Louisiana Study was conducted in accordance with Section 431 of the Water Resources Development Act (WRDA) of 2000, Public Law 106-541, dated 11 December 2000, which reads as follows:

> **SEC. 431. IBERIA PORT, LOUISIANA.**
> The Secretary shall conduct a study to determine
> the feasibility of carrying out a project for navigation, Iberia Port, Louisiana.

In May 2001, the Port of Iberia (POI) requested that the Corps of Engineers (USACE) consider deepening the access channels from the port to the Gulf of Mexico. Reconnaissance study efforts were initiated in 2001 and a reconnaissance report was completed in August 2002 recommending further Federal involvement.

STUDY SPONSOR

The POI participated as the non-Federal cost-share sponsor for this feasibility study by providing fifty percent of the total study costs through cash and in-kind services.

STUDY PURPOSE AND SCOPE

The purpose of this study is to determine the feasibility of deepening the existing navigation channels between the POI and the Gulf of Mexico. An August 2002 reconnaissance report recommended continuing the feasibility phase of deepening the Commercial Canal, portions of the Gulf Intracoastal Waterway (GIWW) and Freshwater Bayou (FWB) from -12-feet MLG (-13.8 NAVD88) to -20-feet NAVD88 from the POI to the Gulf of Mexico. The POI limited the study scope to a maximum authorized depth of -20-feet NAVD88.

The limits of the proposed project extend into Vermilion Parish, which is beyond the jurisdiction of the POI. Thus, the Louisiana Department of Transportation and Development (LADOTD) agreed to act as the non-Federal sponsor for construction of the proposed project.

The scope is to develop and evaluate measures to improve navigation access from the POI to the Gulf of Mexico, improve and maintain the current state of the environmental resources, and to minimize any future marsh degradation.

Economic studies considered the influence of worldwide offshore oil and gas production, but especially that in the Gulf of Mexico region. Engineering and environmental studies were limited to the immediate areas that would be physically affected or influenced, by construction and maintenance activities.

PROJECT LOCATION/CONGRESSIONAL DISTRICT

The study area is bounded by the cities of Lafayette and New Iberia, to the north; the Atchafalaya River to the east; the Vermilion River and FWB to the west; and the Weeks Bay/Vermilion Bay complex and the Gulf of Mexico to the south. Major communities in the study area include New Iberia, Lafayette, Jeanerette, Franklin, Abbeville, and numerous smaller communities. The study area is located in Congressional Districts LA-3 and LA-7.

PRIOR REPORTS AND EXISTING WATER PROJECTS

Federal Studies

- Port of Iberia, Louisiana Navigation Reconnaissance Report, dated August 2002
- New Iberia to the Gulf of Mexico Navigation Channel, Louisiana Feasibility Study
- Intracoastal Waterway Locks, Louisiana Feasibility Report, dated November 2003
- Louisiana Coastal Area, Louisiana – Ecosystem Restoration Feasibility Study.
- Louisiana Coastal Protection and Restoration

Federal Projects

- Atchafalaya River and Bayous Chene, Boeuf, and Black, Louisiana Project
- GIWW Project
- FWB
- FWB Lock By-Pass
- Mermentau Basin.

Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA) Projects

- CWPPRA - Freshwater Introduction South of Highway 82
- CWPPRA - South White Lake Shoreline Protection
- CWPPRA – Boston Canal/Vermilion Bay Shore Protection
- CWPPRA – Four Mile Canal Terracing and Sediment Trapping
- CWPPRA – Little Vermilion Bay Sediment Trapping
- CWPPRA – Lake Portage Land Bridge
- CWPPRA – Sediment Trapping at “The Jaws”
- CWPPRA – Bayou Sale Shoreline Protection
- CWPPRA – Cote Blanche Hydrologic Restoration
- CWPPRA – FWB Bank Stabilization
- CWPPRA – FWB Wetland Protection
- CWPPRA – Pecan Island Terracing

- CWPPRA – Oaks/Avery Canal Hydrologic Restoration, Increment 1
- CWPPRA – FWB Canal Shoreline Protection Study.
- CWPPRA – Weeks Bay Shoreline Protection/Freshwater Redirection Project
- CWPPRA-Vermilion River Cutoff Bank Protection Project
- CWPPRA - Marsh Island Hydrologic Restoration Project

State of Louisiana Studies and Projects

- Commercial Canal
- Department of Natural Resources Coastal Management Division, Conditional Coastal Use Permit for maintenance dredging of the Rodere Canal, Commercial Canal and existing open-water canals extending 3,500-feet into Weeks Bay.
- Quintana Canal Cypremort Point Marsh Shore Protection
- Pecan Island Freshwater Introduction
- FWB Bank Protection
- Chenier as Tigre
- Marsh Island
- Hammock Lake
- Yellow Bayou Wetland

FEDERAL INTEREST

Navigation improvements are evaluated based on National Economic Development (NED) benefits according to the Principles and Guidelines (P&G). However, recent Congressionally mandated language expanded the guidelines for calculation of the NED. The Congressionally mandated language dated May 11, 2005 states:

> **SEC. 6009. OFFSHORE OIL AND GAS FABRICATION PORTS.**
> In determining the economic justification for navigation projects involving offshore oil and gas fabrication ports, the Secretary of the Army, acting through the Chief of Engineers, is directed to measure and include in the National Economic Development calculation the value of future energy exploration and production fabrication contracts and transportation cost savings that would result from larger navigation channels.

Under the legislation, the full monetary value of any contract awarded to the Port of Iberia for the deepwater fabrication of offshore exploration and production equipment is included in the calculation of benefits. Furthermore, any benefit using Deepwater Fabrication contracts is to be counted as a benefit for project justification regardless if work was displaced from foreign or domestic yards.

S.2 STUDY OBJECTIVES

PROBLEMS AND OPPORTUNITIES

This study focused on examining opportunities to alleviate the problems stemming from the shallow depth of water access to and from the POI by improving navigation access. Rigs and platforms designed for the shallow offshore environment were light and could

use navigation channels with the same width and depth as those used for inland waterborne commerce. New structures that economically extract the hydrocarbons from the deep-sea bottom are much larger and heavier than the traditional shallow rigs. These large structures require deeper navigation waterways to the Gulf of Mexico than shallow water rigs.

Some of the ports along the Gulf of Mexico that were traditionally leaders in shallow water rig component fabrication and rehabilitation have found themselves shut out of the deepwater market due to insufficient draft in existing navigation channels. The POI is one such port. The POI has facilities, infrastructure, and skilled labor in place for fabricating deepwater topsides, but many of the major producers will not consider bids submitted by the POI fabricators due to draft restrictions.

PLANNING OBJECTIVES

In addition to the Federal objective contained in Engineering Regulation 1105-2-111, the following specific planning objectives were developed for the POI study:

a. Develop the most effective plan for providing deep draft access to the POI from the Gulf of Mexico.
b. Use dredge material to beneficially restore bank line and create marsh.

PLANNING CONSTRAINTS

Planning activities are constrained by laws, policies, and regulations governing Federal water resources development projects. The following environmental and social impacts were considered:

- Avoid and minimize damages to existing healthy marsh or wetlands by disposing of any dredged material in a beneficial manner.

- Federal and state agencies are concerned with deepening and leveeing of channels because scientific literature states that the deepening of channels is often responsible for the demise of wetlands in the Louisiana coastal marshes.

- The POI requested that the channel depth not exceed 20-feet due to increased cost sharing responsibilities for projects beyond 20-feet.

- Vermilion Parish residents have expressed concerns with bank line erosion from wave wash and salinity intrusion.

S.3 ALTERNATIVES

PLAN FORMULATION RATIONALE

The plan formulation rationale is used to evaluate a range of alternatives that would satisfy the planning objectives identified previously. The POI, Louisiana Navigation Reconnaissance Report evaluated a range of alternative alignments from the POI to the Gulf of Mexico and recommended a single economically feasible alignment for further analysis, known as the FWB Alignment. In feasibility, various channel dimensions were investigated to improve navigation from the port and facilitate the construction and transportation of larger, heavier deepwater platforms to the Gulf of Mexico. A preliminary screening was performed and one channel dimension was selected for detailed analysis. The feasibility analysis evaluated several alternatives for dredge disposal.

MANAGEMENT MEASURES AND ALTERNATIVE PLANS

Several alternatives existed for routing POI vessel traffic to the Gulf of Mexico (Coastal Engineering and Environmental Consultants, Inc. 2001 and USACE August 2002). All alternatives used the existing channel, known as the Commercial Canal, and connected with the GIWW. The first alternative was to route vessel traffic west on the GIWW and south through the Vermilion River Cutoff to the Gulf of Mexico. The second alternative was to route the vessel traffic southwest through Vermilion Bay and into the Gulf of Mexico. The third alternative was to route vessel traffic east on the GIWW and south through the Lower Atchafalaya River. Cursory investigations that explored the maintenance of navigation channels through Vermilion Bay and the Lower Atchafalaya River revealed that the existence of fluid mud rendered these channels inefficient and, in the case of Vermilion Bay, increased the likelihood of saltwater intrusion. The Lower Atchafalaya River route requires an increased travel distance and would likely incur added transportation delays because of existing structures. Thus, enough information existed to rule out these three alternatives from further study.

FINAL ARRAY OF ALTERNATIVES

The FWB Alignment incorporates four existing channels – Commercial Canal, west on the GIWW and then south on FWB to the Gulf of Mexico – in order to reduce costs. Vessel dimensions are used to determine both depth and width of a navigation channel. Several proposed channel dimensions were evaluated based on current traffic patterns and projected vessel sizes based on traffic analysis prepared for the USACE. It was determined that the 150-foot channel would adequately serve the majority of vessel traffic and therefore, was the maximum channel width evaluated.

Channel design depths under consideration are 16, 18, and 20-feet NAVD88, plus 3-feet of advanced maintenance and overdepth dredging. The shallower depths (16’ and 18’) would not accommodate the larger vessels required to transport deepwater topsides and

jackets. Additionally, some vessels would be restricted to 1-way traffic in their use of the modified channel.

In response to the marsh loss and erosion in the study area, the USACE and other resource agencies concluded that all dredged material excavated from the inshore channels for the construction and maintenance of this project would be confined behind rock dikes and used to reestablish the bank line of the eroding channels. Any material not in the confined bank line disposal area would then be used for wetland restoration in broken marsh areas and shallow open water areas.

COMPARISON OF ALTERNATIVES

An incremental analysis was conducted on alternative channel depths. The selection of the channel depths is based on the size of the deepwater fabrication topsides that POI is projected to win. The weight of the topside itself is the fabrication weight. However, additional components are added to the topsides for a combined installed or load-out weight, which ultimately determined the channel sizes that were evaluated. Using installed weights, the 16-foot channel would accommodate topsides of 9,000 tons or less, 18-feet would accommodate 12,000 tons or less and the 20-foot channel would accommodate 15,000 tons or less.

Total construction cost is estimated to be $203 million for the 20-foot channel, $179 million for the 18-foot channel, and $156 million for the 16-foot channel, which would be spent over a 5-year period.

KEY ASSUMPTIONS

An analysis of the worldwide petroleum reserves along with estimates of future production by foreign and domestic companies over a 50-year period was developed. According to various studies, shallow water oil exploration is in steady decline and the trend is expected to continue for the near future. Clearly, the focus for future oil exploration and production has shifted to the deeper waters of the Gulf of Mexico and West Africa.

With the recommended plan and No Action Plan, the U.S. would have a 100 percent market share of Gulf of Mexico topsides. In the without project conditions, that U.S. share would be divided among the Big Four/Big Three fabricators that are eligible to bid because of sufficient water depth. Note that at the time of this report, one of the Big Four fabricators is in the process of purchasing another of the Big Four fabricators. The basic assumption for without project conditions is that the POI would not be able to participate as a prime contractor in any of the projected deepwater offshore topsides fabrication projects due to depth restrictions.

Since there is uncertainty in estimating the size of the GOM market, we used multiple scenarios representing a range of possible values. Therefore, in addition to the Infield

estimate of the GOM market, two estimates based on the MMS low forecast and MMS high forecast are incorporated into the overall analysis.

Over the entire 50-year forecast period, it was projected that 57 production platforms would be developed in the Gulf of Mexico using the Infield projection. This equates to 90 platforms using the MMS high projection and 56 platforms using the MMS low projection. The POI's share of the U.S. total market under with project conditions was estimated using an average and maximum number of annual production hours. Then several market scenarios were evaluated for deepwater production in addition to the continuing shallow water topside work already assumed. For the with project conditions using the Infield GOM projections, the POI is assumed to attract a maximum of 14.25 deepwater topsides (25% market share) and a minimum (assuming the worse case of all scenarios) of 7.33 deepwater topsides (12.9% market share), between 2012 and 2052. Correspondingly, using the MMS high GOM projections results in a higher maximum and minimum and using the MMS low GOM projections result in a slightly lower maximum and minimum.

The following environmental assumptions were considered:

- Avoid and minimize damage to existing healthy marsh or wetlands by disposing of any dredged material beneficially.

- Deepening and leveeing of channels is often responsible for the demise of wetlands in the Louisiana coastal marshes.

- Residents have expressed concerns with bank line erosion from wave wash and salinity intrusion.

RECOMMENDED PLAN

The plan that reasonably maximizes net contributions to economic development is designated as the NED Plan. Due to the uncertainty of projections of both the GOM market and the POI market share, a scenario approach was taken to evaluate the project benefits. However, this resulted in seventy-two scenario combinations of projected outcomes when considering both the GOM market and POI's resulting market share for deepwater topsides. Therefore, we selected the mid-point of the range of the various scenarios and identified the plan with the maximum net benefits for that mid-point condition. We analyzed two cases using the mid-point of the scenarios, one using the average of the Infield and MMS high GOM market forecast and one using the MMS high GOM market forecast by itself. In looking at the mid-point of the full range of scenarios when using the average of the Infield and MMS high GOM data, the results demonstrate that the 20-foot channel maximizes the net benefits. In looking at the mid-point of the range of scenarios using the MMS high GOM market, the results also demonstrate that the 20-foot channel maximizes the net benefits. Since recent information suggests that even the MMS high GOM market forecast may be low, this leads to the outcome of selecting MMS high for the GOM forecast, as MMS high reflects a larger market size

compared to the Infield / MMS high average, and then utilizing the mid-point of the range of data for the POI market share scenarios. Therefore, the recommended plan is the 150-foot wide by 20-foot deep channel, with net benefits of $7,724,000 and a benefit to cost ratio of 1.5.

The FWB Alignment addresses the primary planning objective of providing improved navigation access for existing and future deepwater oil and gas production platforms at the POI. The lengths of the proposed GIWW, FWB and bar channel and Commercial Canal are 20 miles, 18 miles, 7.5 miles, and 7.5 miles respectively, with an additional 7 miles through the Port of Iberia itself. The least-cost environmentally acceptable method of enlarging the channels to 20-feet deep and 150-feet wide, while disposing of dredge material, was developed. Dredged material would be used to reestablish the bank line, create marsh, and nourish the shoreline resulting in net positive environmental impacts.

The true NED plan might exceed the 20-foot depth; however, this study is limited to the 20-foot alternative. The Locally Preferred Plan (LPP) identified for this feasibility report is the 150-foot wide by 20-foot deep alternative. The first cost to construct the project is estimated to be $203,000,000, which includes dredging costs, rock dike construction costs, swing barge installation costs, real estate acquisition costs, and pipeline relocation costs. The operation, maintenance, repair, rehabilitation, and replacement (OMRR&R) for the recommended plan is estimated at $3,699,000, with the OMRR&R on the existing channel estimated at $1,068,000, resulting in the net average annual cost of OMRR&R at $2,631,000.

The requirements of Section 404(r) of Public Law 92-500, as amended, have been met.

SYSTEMS/WATERSHED CONTEXT

The Louisiana Coastal Area (LCA) team was consulted throughout the study process. The LCA near-term course of action does not have any restoration features in the immediate vicinity of the project. The goals associated with the LCA Ecosystem Restoration Plan (LCA Plan) are to reverse the current trend of degradation of the coastal ecosystem and maximize the use of restoration strategies throughout coastal Louisiana through:

- Ecological restoration of healthy, productive, and diverse coastal habitats within critical, high-priority coastal areas

- Enhanced sustainability of critical, high-priority areas within the LCA that have essential for and function of the natural ecosystem

- Integrated restoration program that results in multiple benefits not solely for wetlands, but for communities, industries, and natural resources of the coast

The only foreseeable impact to the LCA from the POI recommended plan would be a positive impact resulting from the disposal of dredge material in the shallow water inter-

tidal zone on the west side of FWB. This material would be kept in the littoral drift and deposited up and down the coast, thus mimicking the natural building of the Chenier Plains of coastal Louisiana.

ENVIRONMENTAL OPERATING PRINCIPLES (EOP)

Team members representing various Federal and state resource agencies were invited to actively participate and take ownership in the navigation study early in the process. Invoking the EOPs early in the study process supported National Environmental Policy Act (NEPA) compliance and promoted public acceptance toward the feasibility study. Inviting the resource agencies and stakeholders to be actively involved in the decision making process during the entire plan formulation process allowed for early resolution of some of the controversial issues of the project hence making the review process smoother.

Identification of channel alignment and dredge material disposal was accomplished with the help of various agency participants as well as stakeholders to ensure a plan was pursued that would ensure balance and synergy among human development activities and natural systems. The entire dredge material disposal plan was considered precedent setting by the resource agencies and the majority of the public involved in portions of the study process. As a result, the project delivery team (PDT) recognized the interdependence of life and the physical environment and incorporated this relationship into the study process for the best possible outcome. With involvement from individuals outside of the USACE, the environmental consequences related to deepening existing navigation channels allowed a win-win alternative to be identified early in the study process. Existing data was used to exclude unreasonable alternatives, thus minimizing study time and cost.

The recommended plan meets the majority of the sponsor and stakeholder needs while fully engaging nearly all of the EOPs to culminate in a positive environmental output. The EOPs are consistent with NEPA, the Army's Environmental Strategy with its four pillars of prevention, compliance, restoration and conservation, and other environmental statutes and Water Resource Development Act that govern USACE activities.

INDEPENDENT TECHNICAL REVIEW

The Mobile District of the USACE performed Independent Technical Review (ITR) of the draft main report, DEIS, and all supporting appendices.

S.4 EXPECTED PROJECT PERFORMANCE

PROJECT COSTS

A summary of the implementation costs of the recommended plan is presented in **table S-1**, and a summary of the operation and maintenance costs is presented in **table S-2**. The figures presented have been rounded for reporting convenience.

Table S - 1
Summary of Implementation Costs
(2004 Price Levels)

Construction Cost	$151,780,588
Pre-construction, Engineering & Design	6,198,646
Construction Management	6,720,724
Removals	21,536,506
Bulkheads	14,912,344
Real Estate	1,695,000
Fish and Wildlife Mitigation	0
Total Implementation Costs	$202,843,808
(Rounded)	**$203,000,000**

Table S - 2
Summary of Operation, Maintenance, Repair, Rehabilitation, and Replacement Costs of the Recommended Plan and Avoided Existing OMRR&R Costs (Benefits)
(2004 Price Levels)

Annual OMRR&R Costs	
Annual OMRR&R, 20 X 150-Foot Channel	$ 3,310,000
Annual OMRR&R, Freshwater Bayou Bypass Floodgates	$ 287,000
Annual OMRR&R, Environmental Features and Monitoring	$ 102,000
TOTAL ANNUAL OMRR&R COSTS	**$ 3,699,000**
Avoided (Benefits) Annual OMRR&R Costs	
Avoided Annual OMRR&R, 12 X 125-Foot Channel	$ 948,000
Avoided Annual OMRR&R, Freshwater Bayou Bypass Floodgates	$ 120,000
TOTAL ANNUAL AVOIDED OMRR&R COSTS	**$ 1,068,000**
Net Total OMRR&R Costs for Recommended Plan	***$ 2,631,000***

The implementation costs include the costs of the construction of the deepening and widening of the FWB Bypass Channel, FWB Channel, GIWW, Commercial Canal, and the port area; bypass channel floodgates, removals, bulkhead replacement, rock dike construction, erosion protection; the cost of the pre-construction engineering and design of the channel; the costs of managing the construction contract for the channel and associated features and the costs of acquiring additional real estate interests for the recommended plan.

EQUIVALENT ANNUAL COSTS AND BENEFITS

Table S-3 displays the recommended plan's average annual benefits and costs. None of the Deepwater Fabrication benefits listed in the table are in accordance with the P&G, since they represent work being displaced from other domestic yards. However, these Deepwater Fabrication benefits have been measured in accordance with Congressionally mandated language that directed inclusion of these benefits in the NED calculation. Note that transportation cost savings are not included in the benefits for Port activity that is unrelated to topside fabrication since those benefits could not be identified to a reasonable level of confidence.

Table S - 3
Average Annual Benefits and Costs
(2004, $1,000, 5.125 Percent)

COSTS	
Annual Construction Cost	$12,322
Annual OMRR&R Cost	$3,699
Total Annual Cost	**$16,021**
BENEFITS	
Deepwater Fabrication Benefits	22,678
OMRR&R Cost Savings	$ 1,068
Total Annual Benefits	$23,746
Net Benefits	$7,724
BCR	1.5
Base Year	2012

COST SHARING

The first costs of the recommended plan are currently estimated to be $202,843,808. The Federal share during construction would be $148,303,762. The non-Federal sponsor's 10 percent share of general navigation features required during construction would be $16,478,196. In addition, the sponsor would provide LERRD and local service facilities amounting to $1,613,000 and $14,912,344 respectively. For the purpose of this report, all pipeline relocations are non-compensable and thus are removals. The facility owners would be responsible for $21,536,506 for removals. Upon completion of the project, the sponsor would be responsible for a 10 percent payback to the USACE based on total project cost. That amount would be $14,865,196 and can be paid over a period of 30 years. The $1,613,000 for Real Estate would be creditable towards the 10 percent after construction.

NON-FEDERAL WORK-IN-KIND

The non-Federal sponsor has expressed a desire to perform work-in-kind in order to provide the recommended plan in an efficient, timely, and cost effective manner and to satisfy a portion of the non-Federal cost share. The project feature described below is requested to be performed as work-in-kind:

(1) Design, construct, and manage the construction of the By-Pass Channel Floodgate.

The construction cost of this potential work-in-kind is estimated to be $30,637,232. The sponsor shall be required to provide additional cash contributions to satisfy the non-Federal cost share requirement.

PROJECT IMPLEMENTATION

The Louisiana Department of Transportation and Development (LADOTD) would obtain the real estate interest in the Commercial Canal owned by the POI via a cooperative endeavor agreement with the POI. Access to the project site would be available from the GIWW, FWB, and the Gulf of Mexico. For the floodgates, the contractor may mobilize his equipment by barge westward on the GIWW and southward on FWB from New Iberia. The construction site for the by-pass channel structures is located in an isolated location adjacent to the existing FWB Lock. All construction would be performed from barge or water access.

OPERATION, MAINTENANCE, REPAIR, REHABILITATION, AND REPLACEMENT (OMRR&R)

In order to maintain the 20-foot depth in Commercial Canal, an estimated 500,000 cubic yards of material would be dredged for years 5 and 10 after construction completion; 400,000 cubic yards for year 20 after construction completion; and 150,000 cubic yards for years 35 and 50 after construction completion. The GIWW would require an estimated 550,000 cubic yards of material to be dredged in years 10, 25, and 40. The FWB channel would require an estimated 480,000 cubic yards of material to be dredged in years 10, 25, and 40. The FWB Bar channel would require an estimated 2.3 million cubic yards of material to be dredged every 3 years.

KEY SOCIAL AND ENVIRONMENTAL FACTORS

All participating agencies and Vermilion Parish interests expressed concerns that deepening the channels associated with the project would increase salinity levels. The CEMVN investigated the potential for saltwater intrusion from alternatives under consideration and prepared a written report of its findings (**Appendix B**, section 3). The investigations concluded that for a channel 20-feet deep from POI through GIWW and FWB, salinity increases would be negligible and should not result in adverse impacts to water supplies, adjacent marshes, or other designated uses.

STAKEHOLDERS PERSPECTIVES AND DIFFERENCES

Coordination with Federal, state, and local agencies and the public was maintained throughout the study to assure that all aspects of the water resource problems were addressed. The following statement was provided by the Port of Iberia on 7 March 2006:

> The Local Sponsor's interest in navigation improvements for the POI and Acadiana Region has been established since the early 1900s. In the early years of the port, access to the Gulf of Mexico was primarily needed for recreational and commercial fisheries but as the oil & gas industry developed and matured, the POI systematically became a "hub" for the central Gulf of Mexico offshore oil & gas fabrication and service industry. For many years the POI, Iberia Parish, Acadiana Business Community, and the State of Louisiana have invested millions of dollars of infrastructure in support of the jobs and economic well-being of the POI. Currently the POI requires significant waterway and channel improvements for it to continue to support and service the oil & gas industry as the industry moves further out into the Gulf of Mexico.
>
> To accomplish this initiative, Congress, in the Water Resources Development Act of 2000, authorized the USACE "to conduct a study to determine the feasibility of carrying out a project for navigation, Port of Iberia, Louisiana" and this report is a corroboration of that effort. As this Feasibility Study was being accomplished, it became apparent to everyone involved that the Principals and Guidelines (P&G) that the USACE typically uses for "Commodity Handling/Shipping Ports" did not capture the true National Economic Development (NED) Benefits for an "Offshore Oil and Gas Fabrication Port" and therefore Congress enacted revised legislation and "new" language that redefined NED Benefits for Offshore Oil and Gas Fabrication Ports. That language, stated in Section 6009 of Public Law 109-13, allows the inequities of the original P&G to be corrected and truly depicts the NED Benefits of this project.
>
> It should also be noted that the economic market share projections, in the <u>With Project Conditions,</u> include a scenario analysis accomplished by the consultants that <u>may</u> (not will) affect the market share and future awards of "deepwater" topsides. We feel that some of these scenarios are unrealistic and that important additional scenarios are ignored. The competition scenario assumes that other businesses not currently fabricating topsides will enter the market and gain market share. The problem with this assumption is the failure to consider labor and human capital assets that have accumulated in the vicinity of the current fabricators. Offshore oil and gas fabrication is highly specialized and a welder (for example) who works in a shipbuilding facility cannot just move into topside fabrication. One of the Port of Iberia's greatest assets is its' labor supply. A few years back, one of the POI's most experienced fabricators in the Gulf, bought a facility in Lake Charles, LA that had 40 foot water depth at the fabrication yard, in an attempt to overcome the depth restrictions at the Port of Iberia. After securing a contract based on prior performance, the fabricator was unable to assemble a labor

force at Lake Charles that would allow them to complete the project within a competitive budget. The fabricator lost money on the project and closed down the yard shortly thereafter. Accordingly, we feel that additional competition in this highly competitive and specialized market is unlikely. Also competition and the availability of EPC contracts have historically existed in the POI market and when a "historical" 25% market share is projected for the With Project Conditions, then competition and EPC contracts are already included in the numbers.

In addition, scenarios that are not in the analysis should include national security considerations and the various projections that the market might take based on the price of oil and gas on the world market. Virtually all of the projections that are available were based on $18 to $30 a barrel oil. We feel that it is more likely that oil will reach $100 a barrel before it again falls to $18 and/or $30 a barrel. These are scenarios both of which would increase demand for Gulf oil and gas and subsequently topsides and result in increases to the projections of the market that are used in the Feasibility Report. There are three projections in the Economic Appendix of the Feasibility Report: MMS high, MMS low, and Infield.

- MMS low ($18 per barrel) and high ($30 per barrel) projections for topside demand are based on a 1996 projection, which does not take any of these additional factors (above) into account. The USACE bases their low and high estimates upon a 90% confidence interval around the mean estimate of undiscovered petroleum reserves in the GOM under federal waters. On its web site (http://www.mms.gov/revaldiv/MMS%2096-0034.htm), the MMS says, of the 1996 *An Assessment of the Undiscovered Hydrocarbon Potential of the Nation's Outer Continental Shelf;* **"This is not the current National Assessment but has been retained for historical information."**

- The Infield projection, which was obtained by the USACE, through its economic consultant GEC, attempts to predict for 50 years the amount of "deepwater" topsides that will be fabricated for the Gulf of Mexico. In doing so, an internal report by Infield was used to develop the market predictions included in the report. The Local Sponsor and the Corps were not allowed to review the data sets that were used in Infield's report due to a "confidentiality" conflict and therefore, were unable to verify its validity or accuracy. Infield's projections also do not include any increases in the price of oil and gas in their 50-year outlook.

It is the position of the Local Sponsor that using the mean number of platforms actually placed on the Gulf deepwater over the last five years is a more reasonable way to project the future. The assumptions are transparent here and they are based on actual market conditions. The Deepwater Royalty Relief Act was passed in 1995 and was fully in effect influencing the market by 2000. Infield's table 6-4 (page 52) is redone below starting with the five years 2000-2004. The table assumes that the average number of deepwater installations over the five years (3.6 rounded to 3.5) will continue to be the annual average between 1012 and

2050. Since these five years occurred when oil was in the $30+ per barrel and prices are now in the $60+ per barrel, this would seem to us to be a reasonable assumption. This projection results in 136 topsides projected for 2012-2050 not 57 as projected by Infield. A 25% share of these for the Port of Iberia is 34, not 14 which would increase all projections by a multiplier of 2.43.

Because of these factors (above), the stakeholder's perspective is that the MMS high projection is still a very conservative estimate and of the estimates contained in the Feasibility Report, this is the only one that should be used!

Also in the Economic Appendix of this report, the USACE bases its economic projections for fabrication contracts for "deepwater" topsides on an assumption that no major world markets can be expected to offer substantial new opportunities for POI fabricators. The POI has disputed this assumption all along and has sited many instances where this assumption is incorrect. Proof toward the POI's position is verified by the fact that recently Dynamic Industries, Inc., a POI fabricator, was awarded a $150 million dollar contract from Cabrinda Gulf Oil and Gas Company for two offshore platforms and pipelines for the Banzala Lago Development in Angola (The Daily Advertiser dated 08/12/05).

Also, the transportation cost savings (TCS) are not included in this revised report even though they were included in the 2005 Draft Feasibility Study. It is agreed upon by most involved in this economic analysis that a 20-foot channel would definitely allow for larger vessels and commodity transports would contribute transportation cost savings. Due to the inability to "absolutely" quantify them, they were eliminated from the benefit calculations. Therefore, it is the POI's opinion that the Benefit Cost Ratios (BCR) that are being used throughout this report to justify the project are extremely conservative and do not include the entire international market sector, do not include the value of any transportation cost savings and do not offer a true projection of the future market condition.

Because of the time constraints of this project and the minimum requirement of WRDA to only have a BCR greater than one, the POI has agreed to allow this Feasibility Study Report to go unchanged, but would like the reviewer of this document to be aware that it is the opinion of the Local Sponsor that the BCR included in this report is very conservative and should be much higher.

Units	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Australasia	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
East Asia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eastern Europe	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
India	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Latin America	3	2	2	1	2	3	4	4	3	4	4	2	1	1	2	3
Middle East	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
North Africa	0	0	0	0	0	0	2	0	1	0	0	0	0	0	0	0
North America	2	4	2	5	5	1	1	4	3	4	3	4	3.5	3.5	3.5	3.5
NWECS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
South & East Africa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
South East Asia	0	1	0	2	0	0	2	2	5	0	1	0	1	2	3	2
Southern Europe	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
West Africa	0	1	0	2	3	4	3	6	5	2	3	4	3	3	3	2
Grand Total	5	8	4	10	10	8	12	16	18	11	13	10	9	10	12	11

Units	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025		25-29	30-34	35-39	40-44	45-49
Australasia	1	1	0	0	0	0	1	0	0	0		0	0	1	0	0
East Asia	0	0	0	1	0	0	0	0	0	1		1	1	0	0	0
Eastern Europe	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
India	1	0	0	0	0	0	1	2	1	0		1	0	0	0	0
Latin America	3	3	2	2	3	3	2	2	3	2		11	2	4	6	3
Middle East	0	0	0	0	1	0	0	0	0	0		1	0	0	0	0
North Africa	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
North America	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5		17.5	17.5	17.5	17.5	17.5
NWECS	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
South & East Africa	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
South East Asia	1	2	2	1	0	1	0	1	0	2		4	2	6	3	3
Southern Europe	0	1	0	0	0	0	0	0	0	0		0	0	0	0	0
West Africa	2	4	1	2	2	3	2	4	2	0		3	10	2	1	2
Grand Total	13	16	10	11	11	12	11	14	11	10		46	40	38	35	33

Port of Iberia
Final Main Report
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INTRODUCTION

The United States Army Corps of Engineers - Mississippi Valley Division, New Orleans District (CEMVN) in partnership with the Port of Iberia (POI), conducted this study. Results of this study are contained in a main report and appendices. The main report also includes a final environmental impact statement (FEIS) and presents the recommended plan for improving navigation access to the POI, located in Iberia Parish, Louisiana.

CHAPTER 1 STUDY INFORMATION

1.1 STUDY AUTHORITY

The Port of Iberia, Louisiana Study was conducted in accordance with Section 431 of the Water Resources Development Act (WRDA) of 2000, Public Law 106-541, and dated 11 December 2000, which reads as follows:

> ***SEC. 431. IBERIA PORT, LOUISIANA***.
> The Secretary shall conduct a study to determine the feasibility of carrying out a project for navigation, Iberia Port, Louisiana.

In May 2001, the POI requested that the U.S. Army Corps of Engineers (USACE) consider deepening the access channels from the port to the Gulf of Mexico. Reconnaissance study efforts were initiated in 2001 and a reconnaissance report was completed in August 2002 recommending further Federal involvement.

1.2 STUDY SPONSOR

The non-Federal cost-share sponsor for this feasibility study was the POI. They provided 50 percent of the total study costs through cash and in-kind services.

1.3 STUDY PURPOSE AND SCOPE

The POI was authorized and constructed by Act 128 of the Louisiana State Legislature in 1938, to provide a navigation outlet for trade and transportation of offshore fabrication modules. The purpose of this study is to determine the feasibility of deepening the existing navigation channels between the POI and the Gulf of Mexico. The reconnaissance report recommended deepening the Commercial Canal, portions of the Gulf Intracoastal Waterway (GIWW) and Freshwater Bayou (FWB) from -12-feet MLG (-13.8-feet NAVD88) to -20-feet NAVD88 from the POI to the -21-foot NAVD88 contour in the Gulf of Mexico.

The POI has indicated that they would be willing to participate in a cost-shared navigation project up to a maximum authorized depth of 20-feet. However, the limits of the proposed project extend into Vermilion Parish, which is beyond the jurisdiction of the

POI. Thus, the LADOTD agreed to act as the non-Federal sponsor for construction of the proposed project. The State of Louisiana enacted legislation (La. R.S. 34: 3301 et seq.) designating LADOTD as the non-Federal Sponsor/Assuring Agency should Congress authorize the Federal project. LADOTD entered into a cooperative endeavor agreement with the POI making them LADOTD's agent for the proposed project.

The scope of this feasibility study is to develop and evaluate measures to improve navigation access from the POI to the Gulf of Mexico; improve and maintain the current state of the environmental resources; and minimize any future marsh degradation.

Economic studies considered the influence of offshore oil and gas production in the Gulf of Mexico region, while engineering and environmental studies were limited to the immediate areas that would be physically affected or influenced, by construction and maintenance activities. Coordination with Federal, state, and local agencies and the public was maintained throughout the study to assure that all aspects of the water resource problems were addressed.

Emphasis during this planning study has been on developing solutions that are implementable and satisfy the identified needs. The results of plan formulation and evaluation are included in the main report and the FEIS. Detailed investigations are discussed in the report appendices. This is a final feasibility report.

1.4 PROJECT LOCATION

The study area, as shown in **figure MR 1-1**, is located in Iberia Parish in south-central Louisiana at the inland terminus of the Commercial Canal. The POI District's territorial limits originally encompassed a large portion of Iberia Parish, including the City of New Iberia. However, Act 486 of 1978 expanded the territorial limits of the district to include most of Iberia Parish and two neighboring municipalities - the City of Jeanerette, and the Town of Loreauville. The study area is located in Congressional Districts LA-3 and LA-7.

The POI is bounded by the cities of Lafayette and New Iberia to the north, the Mermentau Basin to the west, the Atchafalaya River to the east, and the Gulf of Mexico to the south. The total study area encompasses approximately 59 miles of channel. The port is generally centered along the banks of Commercial Canal at a location approximately 7.5 miles north of the GIWW, 9 miles north of Weeks Bay and 4.5 miles southwest of the City of New Iberia. Major communities in the study area include New Iberia, Lafayette, Jeanerette, Franklin, Abbeville, and numerous smaller communities.

The primary access route to the Gulf of Mexico from the POI is through the Commercial Canal to the GIWW, and then proceeds west along the GIWW to FWB and finally south along FWB to the Gulf of Mexico through either the FWB Lock or Bypass Channel. The FWB Lock, the Schooner Bayou Control Structure, and the Leland Bowman Lock on the GIWW all form western boundary conditions of the study area. These structures are all part of the eastern boundary of the Mermentau River Basin System and are managed to

provide an agricultural fresh water supply in the Mermentau Basin. The Atchafalaya River forms the eastern study area boundary. The Commercial Canal is 13-feet NGVD deep by 150-feet wide and extends from the POI near New Iberia, Louisiana, to the GIWW. The GIWW is 12-feet MLG deep by 125-feet wide from the Mississippi River to the Sabine River. Finally, FWB is 12-feet MLG deep by 125-feet wide from the GIWW to the Gulf of Mexico. The Atchafalaya River is approximately 200-feet wide by 20-feet deep from its intersection with the GIWW to the Gulf of Mexico.

Oil and gas activity is a major employment factor in the New Iberia area. South Louisiana and the POI have a long continuous association with the development of offshore oil and gas industry worldwide. This area has been a pioneer in fabricating equipment necessary for all oil and gas related services, partly due to its unique geographic location. Current activities of the port are construction of offshore production platforms; supply of consumable products used in oil exploration and completion; supply of specialized services that maintain offshore activities at all levels; and construction and repair of offshore support vessels and rigs. The POI supports offshore activities primarily by being highly specialized in the fabrication of offshore structures and modules. Because the POI has historically serviced the offshore oil and gas industry, it is poised to be a center of deepwater development. The study area also supports a large commercial and recreational fishing industry.

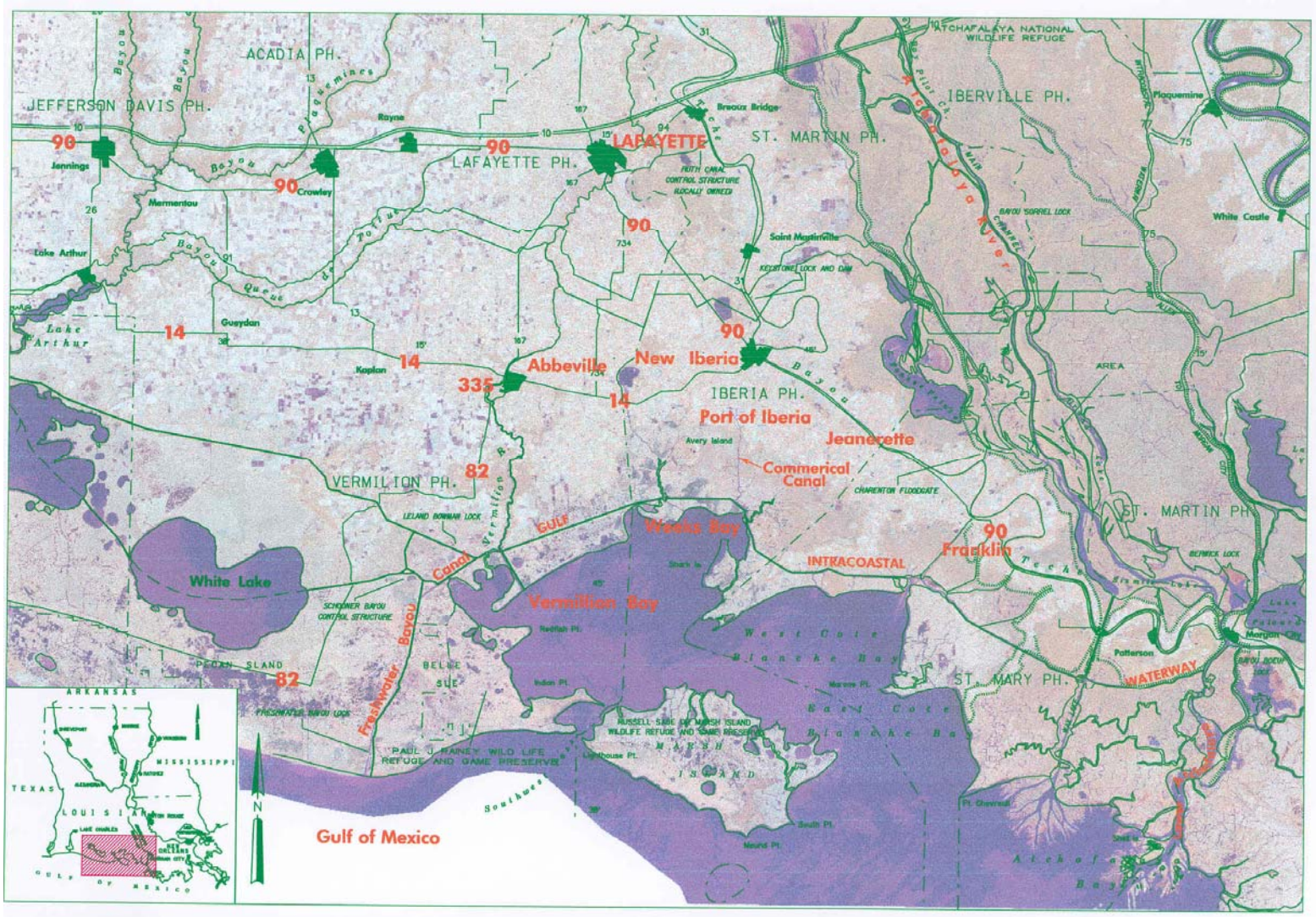

Figure MR 1-1 Port of Iberia Study Area

1.5 PRIOR STUDIES, REPORTS, AND EXISTING WATER PROJECTS

The section provides a brief description of the studies, reports, and projects deemed relevant to the POI study.

1.5.1 Federal Studies

1.5.1.1 Port of Iberia, Louisiana Navigation Reconnaissance Report (Section 905(b) (WRDA 86) Analysis Report)

In August 2002, the USACE Headquarters approved and certified the reconnaissance report. Reconnaissance analysis evaluated several alternative navigation routes and determined that there is a Federal interest in continuing the study.

1.5.1.2 New Iberia to the Gulf of Mexico Navigation Channel, Louisiana Feasibility Study

Study was initiated in December 1977 and completed in April 1981 as an interim feature of the on-going Mermentau, Vermilion, and Calcasieu Rivers, and Bayou Teche study. Parent study covered the spectrum of water and land resource needs including flood control, major drainage, navigation, water supply, water quality control, saltwater intrusion, recreation, fish and wildlife. Considered economic and environmental factors associated with providing a deeper navigational channel from the POI to the Gulf of Mexico. Economically justified plan was not found based on the monetary and non-monetary benefits attributable to it.

1.5.1.3 Intracoastal Waterway Locks, Louisiana Feasibility Report

Completed November 2003 and recommends replacing 56-feet wide by 797-feet long Bayou Sorrel Lock with a U-shaped concrete chamber lock measuring 75-feet wide by 1,200-feet long.

1.5.1.4 Louisiana Coastal Area, Louisiana – Ecosystem Restoration Feasibility Study

Includes Louisiana's coastal area from Mississippi to Texas. Louisiana parishes in the study area are Ascension, Assumption, Calcasieu, Cameron, Iberia, Jefferson, Lafourche, Livingston, Orleans, Plaquemines, St. Bernard, St. Charles, St. James, St. John the Baptist, St. Martin, St. Mary, St. Tammany, Tangipahoa, Terrebonne, and Vermilion. Primary focus is environmental restoration needs that could begin implementation within 10 years. Measures recommended for authorization include five ecosystem restoration projects, beneficial use of dredged material program, and a Science and Technology program; anticipated authorization will be in next WRDA.

1.5.1.5 Louisiana Coastal Protection and Restoration

In coordination with the comprehensive assessment for the Louisiana Coastal Protection and Restoration project, areas recently affected by hurricanes (including the parishes of Cameron, Calcasieu, and Vermilion) are being studied for protection against hurricane surge and wave

action. This Southwest Coastal Louisiana study was initiated in March 2006 and would also address the feasibility of constructing 12-foot armored levees along the Gulf Intracoastal Waterway. It is envisioned that the recommendations from this study will be incorporated in the Louisiana Coastal Protection and Restoration project for further evaluation and implementation.

1.5.2 Federal Projects

1.5.2.1 Atchafalaya River and Bayous Chene, Boeuf, and Black, Louisiana Project

Atchafalaya River is eastern boundary of the study area. Authorized by River and Harbor Act of 1968, in accordance with House Document 155, 90th Congress, 1st Session, the project provides for: 20-foot deep channel in Atchafalaya River, Atchafalaya Bay, and Gulf of Mexico (between -18.0 NAVD88 contour in gulf to Bayou Chene); in Bayou Chene from Atchafalaya River to Bayou Boeuf; in Bayou Black from Bayou Chene near U.S. Hwy 90; and in Bayou Boeuf from Bayou Chene to U.S. Hwy 190 Bridge. The project channels have a bottom width of 400-feet, except in Bayou Boeuf where industrial development on both sides restricts width of 300-feet.

1.5.2.2 GIWW Project

Authorized by River and Harbor Act of 24 July 1946 (Public Law 79-2), the GIWW bisects study area and provides navigation access from Commercial Canal. Features pertinent to POI study:

(1) Inland channel 12-feet deep and 125-feet wide, between Mississippi River at Harvey, Louisiana, and Sabine River near Orange, Texas, which follows short reaches of Bayous Chene and Boeuf (Atchafalaya River and Bayous Chene, Boeuf, and Black project)

(2) Alternate route 12-feet deep and 125-feet wide, between Morgan City, Louisiana, and Mississippi River at Port Allen, which traverses Lower Atchafalaya River between Morgan City and Berwick to connect the main channel of the GIWW (paragraph 1)

Channel passes through East Atchafalaya Basin Protection Levee via Bayou Boeuf Lock in Morgan City (feature of Mississippi River and Tributaries project).

1.5.2.3 FWB Canal and Lock

Authorized in 1960 and located at western boundary of study area, approximately 25 miles southwest of POI. Direct access from GIWW to Gulf of Mexico is via a 12-foot deep by 125-foot wide channel from the GIWW (mile 161.2) west of Harvey Lock, to 12-foot depth contour in Gulf of Mexico near FWB. Has authorized increase to 250-feet wide in Gulf of Mexico approach, as may be found advisable, jetties from shoreline to 6-foot depth contour in Gulf of Mexico, and 84-foot by 600-foot by 16-foot lock near Gulf of Mexico.

1.5.2.4 Mermentau Basin.

“The Mermentau River and Tributaries and GIWW and Connecting Waters, Louisiana, April 1946” (Senate Document 231, 79-2) resulted in authorization of a saltwater barrier lock near the Calcasieu River (Calcasieu Lock) and improvements to channels connecting to the GIWW.

1.5.2.5 Dredging Permit for POI Waterway System

In 1997, the USACE issued a Department of the Army permit with conditions to perform dredging as necessary to maintain navigable depths in canals and barge slips within the POI waterway system.

1.5.3 Coastal Wetlands Planning, Protection, and Restoration Act (CWPPRA) Projects

The Coastal Wetlands Planning, Protection, and Restoration Act (CWPPRA) (Public Law 101-646, Title III) authorized all the following projects.

1.5.3.1 CWPPRA - Freshwater Introduction South of Highway 82

Authorized on 9th Priority Project List (PPL) and has a total project area of 19,988 acres. Project components include: installation of approximately four freshwater introduction water control structures; plug removal; one structure modification; canal enlargement north of Louisiana Hwy 82 to allow water flow across highway to facilitate water flow from lake's sub basin south into Chenier sub basin. Over 20-year project life, will protect 296 acres of wetlands.

1.5.3.2 CWPPRA - South White Lake Shoreline Protection

Authorized on 12th PPL and has a total project area of 5,473 acres. Project calls for construction of segmented breakwaters to protect approximately 55,000 linear feet of shoreline. Breakwaters will be constructed with gaps to allow free movement of aquatic organisms and water. Estimated 270,000 tons of stone will be placed on geotextile fabric. Over 20-year project life, will protect 844 acres of wetlands.

1.5.3.3 CWPPRA – Boston Canal/Vermilion Bay Shore Protection

Authorized on 2nd PPL and has a total project area of 19,988 acres. Encompasses 466 acres of brackish marsh along approximately 16 miles of Vermilion Bay's northern shoreline adjacent to Boston Canal; running from Oaks Canal to Mud Point, project is located roughly 6 miles southeast of Intracoastal City, Louisiana, in Vermilion Parish. Over the 20-year project life, will protect 378 acres of wetlands

1.5.3.4 CWPPRA – Four Mile Canal Terracing and Sediment Trapping

Authorized on 9th PPL and has a total project area of 1,214 acres. Located approximately 4 miles south of Intracoastal City in Vermilion Parish, Louisiana, project area includes all of Little White Lake and part of northeastern embayment of Little Vermilion Bay. Over the 20-year project life, will protect 167 acres of wetlands.

1.5.3.5 CWPPRA – Little Vermilion Bay Sediment Trapping

Authorized on 5th PPL with and has total project area of 964 acres. Involves construction of series of vegetated terraces to diminish waves in Little Vermilion Bay, help increase sediment deposition, reduce rate of shoreline erosion. 20-year project life will protect 441 wetland acres.

1.5.3.6 CWPPRA – Lake Portage Land Bridge

Authorized on 8th PPL and has a total project area of 1,496 acres. Project is located immediately south of Hell Hole in southern portion of Vermilion Bay within Louisiana Wildlife Area Game Preserve and he Paul J. Rainey Wildlife Sanctuary, west of Southwest Pass in Vermilion Parish, Louisiana. Over the 20-year project life, will protect 24 acres of wetlands.

1.5.3.7 CWPPRA – Sediment Trapping at "The Jaws"

Authorized on 6th PPL and has a total project area of 2,782 acres. Project is located in northeast portion of West Cote Blanche Bay in St. Mary Parish, Louisiana. Authorized to reduce wave-induced shoreline erosion within the project area and promote the deposition of sediment by creating vegetated wetland terraces and reducing wave fetch, or the distance waves can travel unimpeded. Distributary channels will be dredged to deliver water and sediment to the project area. Over the 20-year project life, will protect 1,999 acres of wetlands.

1.5.3.8 CWPPRA – Bayou Sale Shoreline Protection

Authorized on 13th PPL and has a total project area of 370 acres. Goal of project is to reduce or, if possible, reverse shoreline erosion and create marsh between breakwater and existing shoreline. Plans include construction of 35,776 linear feet of foreshore rock dike parallel to and approximately 150-feet out from existing eastern shoreline of East Cote Blanche Bay. Over the 20-year project life, will protect 329 acres of wetlands.

1.5.3.9 CWPPRA – Cote Blanche Hydrologic Restoration

Authorized on 3rd PPL and has a total project area of 30,000 acres. Low-level weirs were constructed across seven major water exchange avenues in Cote Blanche system. These passive weirs reduce water exchange between system's interior marsh and outer bays, thereby preventing continued scouring of marsh substrate and conversion to open water. The lower-energy hydrologic regime also encourages accretion of available sediment. Over the 20-year project life, will protect 2,239 acres of wetlands.

1.5.3.10 CWPPRA – FWB Bank Stabilization

Authorized on 5th PPL and has a total project area of 1,724 acres. Located along west bank of FWB Canal near Little Vermilion Bay, 4 miles southwest of Intracoastal City, Louisiana, in Vermilion Parish, it extends north from North Prong and Belle Isle Bayou to Six Mile Canal. Over the 20-year project life, will protect 511 acres of wetlands.

1.5.3.11 CWPPRA – FWB Wetland Protection

Authorized on 2nd PPL and has a total project area of 14,381 acres. Approximately 28,000 linear feet of freestanding, continuous rock dike were built along west bank of FWB Canal. Over the 20-year project life, 1,593 acres of wetlands will be protected.

1.5.3.12 CWPPRA – Pecan Island Terracing

Authorized on 7th PPL and has a total project area 3,550 acres. Located in southeastern Vermilion Parish, Louisiana, approximately 5 miles north of the Gulf of Mexico just south of Pecan Island and Louisiana Highway 82, project calls for constructing adjacent terrace cells in a staggered gap formation, each bordered by terraces made from dredged material. Over the 20-year project life, 442 acres of wetlands will be protected.

1.5.3.13 CWPPRA – Oaks/Avery Canal Hydrologic Restoration, Increment 1

Authorized on 7th PPL and has a total project area of 3,348 acres. Located in northeast Vermilion Bay near Oaks and Avery canals and Tigre Lagoon, and in Vermilion and Iberia Parishes, Louisiana, project includes shoreline stabilization (along Oaks Canal); shoreline protection along (GIWW); low sill rock weir (in human-made channel east of Oaks Canal); armored plug in breached opening along Union Oil Canal; dredge material embankment maintenance (western side of Union Oil Canal); and vegetative plantings (along northern shoreline of Vermilion Bay from Oaks Canal eastward to Avery Canal). Over the 20-year project life, 160 acres of wetlands will be protected.

1.5.3.14 CWPPRA – FWB Canal Shoreline Protection Study

The USACE is conducting a study under the CWPPRA. Purpose of the study is to provide a rock dike along eastern bank of FWB Canal, between Belle Isle Canal and FWB Lock, to halt bank line erosion. The CWPPRA Task Force did not approve construction funds for this project in FY 2005, but the task force will reconsider the project for construction approval in October 2005.

1.5.3.15 CWPPRA – Weeks Bay Shoreline Protection/Freshwater Redirection Project

The USACE conducted a Value Engineering (VE) study to identify viable and cost-effective solutions based on all possible outcomes of the ongoing hydrologic modeling and analysis. Project solutions under consideration include, weirs and/or barrier structures, revegetation of critical shoreline reaches, various shoreline protection and containment measures (rock dikes, sheet piling, geo-bags), and the construction/re-construction of marsh and new terraces. VE study was completed in November 2001.

1.5.3.16 CWPPRA-Vermilion River Cutoff Bank Protection Project

The Vermilion River Cutoff Channel was investigated during reconnaissance as a potential route to the Gulf of Mexico. Project was authorized on 1st PPL. Erosion of west bank of Vermilion River Cutoff has occurred to the extent that the land bridge between the Cutoff and Vermilion Bay, to the west, is breached in several places, allowing wind driven waves from the bay to cross the cutoff and attack the east bank. Thus, erosion on east bank is occurring at an accelerated rate. Purpose of the project was to take action to protect east bank and prevent the scale of deterioration that has occurred on the west bank. Construction was completed on February 11, 1996. Over the 20-year project life, 65 acres of wetlands will be preserved.

1.5.3.17 CWPPRA - Marsh Island Hydrologic Restoration Project

Authorized on 6th PPL, has a total project area of 6,697 acres, and contains 5,034 acres of brackish marsh and 1,663 acres of open water. Natural erosion processes and subsidence along northeast shoreline of Marsh Island have lead to the deterioration of the north rim of Lake Sand. Purpose of the project is to stabilize northeastern shoreline of Marsh Island, including northern shoreline of Lake Sand, and help restore historical hydrology. Over the 20-year project life, 367 acres of wetlands will be protected.

1.5.4 Non-Federal Studies and Projects

1.5.4.1 Commercial Canal

The Commercial Canal is a 7.5-mile segment of the Acadian Navigation Channel. The Acadiana Navigation Channel (ANC) is located within the central region of the study area and provides access from the GIWW, through Vermilion Bay, to the Gulf of Mexico. North of the GIWW, Commercial Canal serves as an extension of the ANC and the main artery of the POI. The ANC, which is extensively used for offshore commercial shipments from the POI, provides a 9-foot deep by 200-foot wide channel. The depth of the ANC is currently limited to a maximum of 9-feet by the USACE permit [SW (Vermilion Bay) 605], which permitted its construction and maintenance. The POI is currently responsible for dredging the Commercial Canal to the GIWW and the port area.

1.5.4.2 Conditional Coastal Use Permit

In 1997, the Department of Natural Resources Coastal Management Division issued a Conditional Coastal Use Permit to allow periodic maintenance dredging of the Rodere Canal, Commercial Canal, and existing open-water canals extending 3,500-feet into Weeks Bay.

1.5.4.3 FWB Bypass Channel and Floodgates

In 1986, the Abbeville Harbor and Terminal District (AHTD) constructed a 125-feet wide by 12-feet deep bypass channel with removable closure structures at each end on the east side of FWB Lock to accommodate the passage of oversized vessels. The AHTD operates the bypass channel and floodgates.

1.5.4.4 Additional Non-Federal Projects with Potential Relevance to POI Study

- Quintana Canal Cypremort Point Marsh Shore Protection
- Pecan Island Freshwater Introduction
- FWB Bank Protection
- Chenier au Tigre
- Marsh Island
- Hammock Lake
- Yellow Bayou Wetland

1.6 FEDERAL INTEREST

The Commerce Clause of the Constitution, and subsequent court decisions that define the right to regulate navigation and improvement of the navigable waterways established the Federal interest in navigation. The merits of navigation projects are currently measured against a single Federal objective, National Economic Development (NED), in accord with the Water Resource Council's Principles and Guidelines (P&G). With the advent of non-Federal cost sharing, state and local water resource objectives are also incorporated into the planning process. The process consists of a series of steps that identify the problems, needs, and opportunities associated with the Federal, state, and local objectives. This process culminates in the selection of a recommended plan.

The P&G states:

> The Federal objective of water and related land resources project planning is to contribute to national economic development consistent with protecting the nation's environment, pursuant to national environmental statutes, applicable executive orders, and other Federal planning requirements.

However, Congressionally mandated language dated May 11, 2005, has expanded the guidelines for calculating the NED (Section 6009 of Public Law 109-13, Emergency Supplemental Appropriations Act for Defense, the Global War on Terror, and Tsunami Relief). This recent Congressionally mandated language states:

> ***SEC. 6009. OFFSHORE OIL AND GAS FABRICATION PORTS***
> In determining the economic justification for navigation projects involving offshore oil and gas fabrication ports, the Secretary of the Army, acting through the Chief of Engineers, is directed to measure and include in the National Economic Development calculation the value of future energy Exploration and production fabrication contracts and transportation cost savings that would result from larger navigation channels.

Under the legislation, the full monetary value of any contract awarded to the Port of Iberia for the deepwater fabrication of offshore exploration and production equipment is included in the calculation of benefits. Furthermore, any benefit using Deepwater Fabrication contracts is to be counted as a benefit for project justification regardless if work was displaced from foreign or domestic yards.

This feasibility report presents an economic analysis based on Public Law 109-13.

1.7 LOCAL SPONSOR'S INTEREST

See **page xiii** of the Report Summary for the statement provided by the Port of Iberia on 7 March 2006.

CHAPTER 2 STUDY OBJECTIVES

2.1 PROBLEMS, NEEDS, AND OPPORTUNITIES

The key problems addressed in this study are related to navigation needs and opportunities in the manufacturing of deepwater petroleum facilities. This study focused on examining opportunities to alleviate the problems stemming from the shallow depth of water access to and from the POI by improving navigation access, thereby enabling the existing POI infrastructure (industry and skilled labor) to continue to support the national energy and development needs.

2.1.1 Deep-Water Exploration

The POI has been an important player in the offshore petroleum industry both in the Gulf of Mexico and in other locations worldwide. Different segments of the offshore petroleum business have developed over the years at the POI. One such segment is the offshore service sector that routinely transports crews, equipment, and supplies to platforms in the Gulf of Mexico. In addition, an offshore rig and component fabrication sector has developed at the POI. These tenants have produced rigs, such as jack-ups, as well as components for larger structures; however, currently their predominant activity is producing portions of topsides for large production platforms. Other POI tenants support the offshore industry by supplying some of the basic parts needed by many segments of the industry.

As the petroleum industry moved to the shallow offshore water, the most economically viable reserves were near-shore oil and gas reserves. Rigs and platforms designed for the shallow offshore environment were light and could use the same navigation channels. As these near-shore reserves diminished in shallow water, the offshore industry moved into deeper water. With breakthroughs in seismic and drilling technologies, very deep-water reserves became economically viable. New structures that extract hydrocarbons from the deep-sea bottom are much larger and heavier than the traditional shallow rigs and require deeper navigation waterways to the Gulf of Mexico. Consequently, some of the ports along the Gulf of Mexico that were traditionally leaders in shallow water rig component fabrication and rehabilitation have found themselves shut out of the deepwater market due to insufficient draft in existing navigation channels. The POI is one such port as the current shallow depth of water access to and from the POI is becoming increasingly inadequate for local industries to compete for and capitalize on the growing deepwater industry. Although the POI has facilities, infrastructure, and skilled labor in place for fabricating deepwater topsides, the major producers will not consider bids submitted by the POI fabricators without a minimum of 20-feet of draft from the POI to the Gulf of Mexico.

2.1.2 Environmental Considerations

Other problems in the project area include an eroding bank along the FWB and the GIWW, and deterioration of surrounding wetlands due to salinity intrusion. The original

GIWW authority specified that a maximum width of 125-feet be maintained. However, in many reaches of the GIWW, the banks are now as much as 400 to 600-feet wide. This bank erosion is contributing to the erosion of already deteriorating wetlands, subsidence, and saltwater intrusion.

There is also a need and opportunity to reduce the rate of marsh loss near the POI. The current rate of bank line erosion near the GIWW and the FWB is 3.4-feet per year (ft/yr) and 4.9-feet per year respectively. This rate of marsh loss is mainly due to erosion caused by wave action on unprotected shorelines. Some loss of internal marsh areas has occurred from development activities and impoundments associated with local land management practices; however, the current loss rate on internal marsh areas relatively low compared to other areas of south Louisiana.

2.2 PLANNING OBJECTIVES

The Planning Guidance, ER 1105-2-100, stipulates, "The Federal objective of water and related land resources planning is to contribute to national economic development (NED) consistent with protecting the Nation's environment…" Contributions to NED are the direct net benefits that accrue to the planning (study) area and the rest of the nation. Water and related land resources project plans shall be formulated to alleviate problems and take advantage of opportunities that contribute to study planning objectives and, consequently, the Federal objective. The following planning objectives were developed for the POI study:

- Develop the most effective plan for providing deeper draft navigation access to the Gulf of Mexico from the POI.
- Use dredge material to restore the GIWW and FWB bank lines and create marsh.

2.3 PLANNING CONSTRAINTS

Planning activities are constrained by laws, policies, and regulations governing the planning and development of Federal water resources development projects. The recommended channel dimensions must have incremental system benefits (transportation savings) in excess of incremental system cost. The range of impacts to be assessed and the planning constraints and criteria that must be applied when evaluating alternative plans has been specified by legislative and executive authorities. Plans must be developed with due regard to the benefits and costs, both tangible and intangible, as well as associated effects on the environment and the social and economic well-being of the region. Federal participation in developments should also assure that any plan is complete within itself, efficient and safe, economically feasible, environmentally acceptable, and consistent with local, regional, and state plans.
In view of the need for deeper access between the Gulf of Mexico and various port facilities coupled with the need to maintain shallow draft traffic, this effort was geared toward identifying the recommended channel dimensions based on current and projected traffic.

The following environmental and social impacts were considered:

- Avoid and minimize damages to existing healthy marsh or wetlands by disposing of any dredged material in a beneficial manner.

- Federal and state agencies are concerned with deepening and leveeing of channels because scientific literature states that the deepening of channels is often responsible for the demise of wetlands in the Louisiana coastal marshes.

- The POI requested that the channel depth not exceed 20-feet due to increased cost sharing responsibilities for projects beyond 20-feet.

- Vermilion Parish residents have expressed concerns with bank line erosion from wave wash and salinity intrusion.

CHAPTER 3 EXISTING CONDITIONS

3.1 EXISTING CONDITIONS

3.1.1 Access to the Port of Iberia

Most of the oilrigs and oil services occur offshore in the Gulf of Mexico; therefore access to and from the Gulf of Mexico is critical to the success of south Louisiana companies. Access to the POI is provided by five waterways: the GIWW, the Atchafalaya River, the Commercial Canal-ANC, the Vermilion River Cutoff, and the FWB. These five waterways are described in the paragraphs that follow.

3.1.1.1 GIWW

The GIWW is a continuous inland waterway along the gulf coast. Currently, the GIWW has a 12-foot deep by 125-foot wide navigation channel from Apalachicola, Florida to Brownsville, Texas. Channel and lock dimensions are the limiting factors determining what vessels can travel on the GIWW. In turn, innovations in vessel technology exert demands to improve the capacities of the waterway. New designs have led to the production of larger barges and tugboats that are more powerful. Advances such as containerization and assemblage of barges into integrated tows have further revolutionized waterway operations. For water carriers to take advantage of these technological breakthroughs, however the channels must be sufficient to accommodate the new vessels. In 1962, Congress recognized limitations of the canal to accommodate the increasing width of tows and power of towboats, when it approved legislation authorizing enlargement of the GIWW between the Atchafalaya River and the Houston Ship Channel to dimensions of 16-feet by 200-feet. However, construction of the channel to these dimensions has not occurred, in part due to the lack of local sponsorship in providing all lands needed for construction and maintenance of the project.

The POI is located approximately 7.5 miles north and inland from the junction of the Commercial Canal and the GIWW. Deepwater access from the GIWW to the Gulf of Mexico is available to the east at the Mississippi River and to the west at the Calcasieu River at distances of approximately 140 and 100 miles, respectively. At present, the primary restriction to east-west passage along the GIWW exists at the LA Highway 317 Bridge at Bayou Sale. This bridge poses a height limitation of approximately 73-feet, and a width limitation of 125-feet, which restricts the transport of large equipment from within the POI. The USACE is responsible for Federal maintenance of the GIWW and FWB to the current dimensions of -12-feet MLG by 125-feet for the inshore channel reaches and -12-feet MLG by 250-feet in the offshore reach of the FWB Bar Channel.

3.1.1.2 Atchafalaya River

The Atchafalaya River is located at the eastern perimeter of the study area. The river, which provides a 20-foot deep by 200-foot wide channel from the GIWW to the Gulf, is extensively used for the transport of offshore oilrigs and platforms from the Morgan City

area. The use of this channel for the movement of large packages from the POI area is prohibited by the 73-feet height restriction at the Bayou Sale Bridge and the 12-foot draft along the stretch of GIWW from Commercial Canal to the Atchafalaya River.

3.1.1.3 Commercial Canal-Acadiana Navigation Channel (ANC)

The ANC is located in the central region of the study area and provides navigation access from the POI, to the GIWW, then continues through Vermilion Bay, to the Gulf of Mexico. North of the GIWW, the Commercial Canal is an extension of the ANC and the main artery of the POI. The ANC is maintained to 9-feet deep by 200-feet wide through Vermilion Bay. The depth is limited to a maximum of 9-feet by the USACE permit [SW (Vermilion Bay) 605], which permitted its construction and maintenance. Commercial Canal is maintained to 13-feet NGVD deep to 150-feet wide and the POI is responsible for dredging the canal to the GIWW. The POI's current Section 404 and Coastal Zone Use Permits (WC-19-990-2265) require that dredge material be placed in designated disposal areas in Weeks Bay and several oil and gas canals that intersect the Commercial Canal.

3.1.1.4 Vermilion River Cutoff and Bay Channel

The Vermilion River Cutoff is a Federal project, which was authorized in 1941 and is located southeast of Intracoastal City, Louisiana. The channel is authorized to 8-feet deep and 80-feet wide; however, the actual width and depth are greater. The Cutoff provides access from the GIWW to the northwest corner of Vermilion Bay. From this location, the Vermilion Bay Channel provides an average depth of 10-feet to the Gulf of Mexico through Southwest Pass, with one exception. A section near the northern terminus of the Cutoff has historically suffered from silt deposition and limits depth to 8-feet in the Vermilion Bay Channel.

3.1.1.5 FWB Canal

Constructed in 1968 as a Federal project, it provides a12-foot deep by 125-foot wide channel. FWB Canal is located at the western boundary of the study area, approximately 25 miles southwest of the POI, and provides direct access from the GIWW to the Gulf through a lock structure. The lock structure is operated to prevent salinity intrusion and has a width of 84-feet and a controlling depth of 12-feet. In order to accommodate the passage of oversized vessels, a 125-foot wide by 12-foot deep bypass channel with removable closure structures at each end was constructed in 1986. The bypass closures also serve to prevent salinity intrusion. The Abbeville Harbor and Terminal District (AHTD) operate the bypass channel, while the Federal Government operates and maintains the FWB Lock structure.

3.1.2 Facilities at the Port of Iberia

Whether in the Gulf of Mexico or worldwide, price and ability to meet delivery schedules are the primary factors in determining which fabricator is awarded a contract. Also

considered are the availability of technically capable personnel and facility space, efficiency, condition of equipment, reputation, safety record, and customer relations.

From the POI, NATCO Group, Nabors Offshore Corporation, and Bayou Companies currently transship many of their products to New Orleans or Houston via truck, rail, or barge to deeper water ports before shipping to the final offshore destinations. These transshipments are required due to restrictions in channel depth that currently exist. As the offshore oil and gas industry expands and contracts in response to global demand, these inefficiencies will restrict or eliminate business opportunities for the POI.

Of the many firms that are residents of the POI, several companies indicated that a deeper channel would reduce the cost of transporting their commodities or reduce the transportation cost of their service vessels, however, this information could not be substantiated. Those firms are:

3.1.2.1 Nabors Offshore Corporation

Nabors Offshore Corporation is one of the world's largest drilling contractors with operations in the United States, Africa, Canada, Central and South America, and the Middle East. Overall, the company has about 600 land drilling rigs and 1,100 land work-over rigs. Its offshore equipment includes 43 platform rigs, 16 jack-ups, 3 barge-drilling rigs, and 30 marine support vessels. Besides drilling, Nabors Offshore Corporation also provides oil field hauling, maintenance, well logging, engineering, and construction services.

3.1.2.2 NATCO Group

NATCO Group manufacturers process equipment, systems, and services for the oil and gas industries, such as Electrostatic Oil Treaters, Oil and Gas Separators, and Sea Water Treatment Systems. Their customers are Exxon Mobil, BP, Amoco, Chevron Texaco, McDermott Int’l, Petrobras, Unocal, PDVSA, Pemex, ConocoPhillips, Amerada Hess, and others both domestic and international.

3.1.2.3 Universal Fabricators International, Inc. (Unifab)

Midfab (formerly Universal International, Inc.’s (Unifab)) primary line of business is the fabrication and assembly of jackets, decks, topsides, and quarter’s buildings for use offshore. Fixed platforms and other structures fabricated by the company are used primarily in the Gulf of Mexico and offshore West Africa. The ship, bulkhead, and load out facilities at the yard enable the company to produce decks and deck components weighting up to 6,500 tons, but access channel limitations restrict structure weights to something under 4,000 tons.

A site was acquired in Lake Charles in 1999 on the 40-foot deep Calcasieu Channel, with operations begun in 2000. The purpose of this acquisition was to secure a deepwater location for the assembly of larger platform components from the POI facility and to

enter into a new line of business: maintenance, refurbishment, and upgrade of deepwater semi submersible drilling rigs and jack up rigs. The Lake Charles facility, which had trouble related to its labor force and business volume, completed its last contract in 2004, and has now been sold. If the company is unsuccessful in returning to profitability or obtaining needed capital, it will not be able to remain a concern in the POI.

3.1.2.4 Sea Mar Management

Sea Mar Management own and/or operate a fleet of offshore service vessels that cater to the everyday needs of the offshore petroleum industry. Their customer base is oilfield drilling companies and oilfield service companies based in the United States.

3.1.2.5 Omega Natchiq, Inc.

Omega Natchiq, Inc. (formerly Omega Service Industries), is engaged in the fabrication of oil platforms and the complete refurbishment of existing platforms. Featured at the 62.5-acre POI facility with a 4,000-foot waterfront is a 180-foot "open cell" bulkhead system that can fabricate and load out projects in excess of 6,000 tons. The yard, like all in the Port, is limited by draft restrictions in the access channel that cannot accommodate the large deepwater structures. As such, Omega Natchiq, Inc. has carved its niche in building module and supporting structures for offshore facilities. To date, the company has fabricated components for several major projects including the topsides for mini-tension leg platforms (TLPs), the first constructed at the POI, the production deck for one platform, pieces for a deepwater pipeline and the rig module for a compliant tower-based development.

At full force Omega Natchiq, Inc. employs between 450 and 500 workers, however recently their workforce has hovered at 25 percent of that capacity. Because of the company's smaller size, it is well suited to survive in the near-term. Adding a layer of insulation is Omega Natchiq's diversification through its technical group that performs electrical and instrumentation panel manufacturing, automation and control and fire and safety. In addition, the company has an operations and maintenance group that can take a platform from the construction yard to the install site and perform hookup, commissioning and, if called upon, operation.

3.1.2.6 Bayou Pipe Coating

The Bayou Pipe Coatings is the largest supplier of pipe coating, insulation, fabrication, and welding services to the deepwater oil and gas industry worldwide.

3.1.2.7 Dynamic Industries, Inc.

Dynamic Industries, Inc. provides large and small-scale onshore fabrication and offshore hookups and maintenance. A large yard (55 acres) and a small yard (16 acres) are maintained at POI, along with an 8-acre facility in Harvey, Louisiana, that deals with small-scale, quick turnaround projects. The main yard has two slips capable of loading

out structures up to 6,500 tons. They estimate a total workforce of 900 and a permanent production force of 773.

The remaining companies at the POI provide support to the firms previously identified or conduct all of their business within the confines of the existing channel dimensions and would not benefit from deeper channels.

3.1.3 Gulf of Mexico Market Analysis

A detailed description of competitors and their accomplishments in the Gulf of Mexico is located in **Appendix A**. In assessing the industry, only primary contractors are identified, leaving out the components contributions of subcontractors. In addition, the basic categories obscure the fact that fabrication yards are involved in a multiplicity of activities that is much more complex than is suggested by the categories jacket and topsides.

Oilfield Publication Limited's three-volume “The World Offshore Field Development Guide” along with the separate “The North Sea Field Development Guide” provides a comprehensive picture of the development of offshore oil and gas fields worldwide. This is the only data source that provides information on the yards where jackets and topsides are fabricated. This source also provides information on the current penetration of Gulf of Mexico fabricators into foreign markets as well as the penetration of foreign fabricators into the Gulf of Mexico market.

Table MR 3-1 lists the platforms in the Gulf of Mexico that are located in water depths ranging from approximately 150 meters to 305 meters. All are conventional platforms with legs resting on the bottom. As can be seen from the table, neither the jacket nor the topsides were constructed in fabrication yards outside of the Unites States. Within the United States, fabrication is evenly distributed between yards in Louisiana and Texas, with heavy participation by McDermott and Gulf Marine Fabricators. All of the references to Gulf Marine are to the same facility under different ownership. Brown & Root is no longer in the platform fabrication business. The table indicates that intermediate water depths have not been a source of foreign competition, but have been a source of competition among fabricators in Louisiana and Texas.

Table MR 3-2 lists platforms located in the Gulf of Mexico in water depths greater than 305 meters and **figure MR 3-1** the deepwater development systems described throughout this report. As can be seen from the table, there is small participation of foreign fabricators in the deepwater Gulf of Mexico topsides market and dramatic participation of foreign fabricators in the Gulf of Mexico deepwater jacket market. With respect to the topsides market in Louisiana and Texas, McDermott leads the way, with participation in 20 projects, including two at its Vera Cruz facility. It is followed by:

(1) Gulf Marine in Texas, with participation in nine projects
(2) Gulf Island in Houma, with participation in five projects
(3) Omega Natchiq at Iberia (POI), with participation in one project
(4) Kiewit yard at Ingleside, with participation in one project

Table MR 3-1
Intermediate Depth Gulf of Mexico Platforms

Designation	Year of Installation	Type	Water Depth (meters)	Jacket/Base Weight (metric tonnes)	Deck/Topsides Weight (metric tonnes)	Jacket/Base Contractor	Deck/Topsides Contractor
Alabaster	1991	Steel	143	4,650	2,050	McDermott Marine, Harbor Island, TX	McDermott, New Iberia, LA
Boxer	1987	Launch	229	13,500	6,500	McDermott	Avondale Shipyard
Cerveza	1981	Launch	285	18,100	NA	McDermott	McDermott
Cerveza Ligera	1982	Launch	282	13,600	7,400	McDermott	McDermott
Chinook Tripod 1	1999	Steel	164	NA	NA	Twin Brothers, LA	Twin Brothers, LA
Cinnamon A	1998	Steel	204	5,500	1,500	J. Ray McDermott, Morgan City	Unifab, New Iberia (deck), Morrison (production skid)
Crystal	1991	Steel	189	7,000	700	McDermott, Amelia/New Iberia, LA	McDermott, Amelia/New Iberia, LA
Enchilada A	1997	Lift	192	7,100	4,400	Aker Gulf Marine, Aransas Pass (jacket/piles)	Gulf Island, Houma (deck)
Ewing Bank 826A	1988	Launch	146	NA	NA	McDermott, Bayou Boeuf, LA	McDermott
Ewing Bank 910	1998	Steel	170	5,700	2,300	Aker Gulf Marine, Aransas Pass, TX	Unifab, New Iberia
Garden Banks 191	1993	Steel	219	NA	NA	USA	USA
Garden Banks 236A	1979	Steel	208	12,000	NA	Brown & Root	Brown & Root
Green Canyon 18A	1986	Launch	232	15,200	5,200	Gulf Marine Fabricators, Ingleside, TX	Gulf Marine Fabricators, Ingleside, TX
Kilauea	1989	Steel	190	NA	NA	Texaco/McDermott	USA
Lobster	1994	Steel	236	15,000	4,500	Aker Gulf Marine, Ingleside, TX	Aker Gulf Marine, Aransas Pass, TX
Marquette A	1989	Steel	187	NA	NA	Gulf Marine Fabricators, Ingleside, TX	Gulf Marine Fabricators, Ingleside, TX
Marquette CPP	1989	Steel	188	NA	NA	Gulf Marine Fabricators, Ingleside, TX	Gulf Marine Fabricators, Ingleside, TX
Miss. Canyon 148A	1980	Steel	198	9,280	NA	Brown & Root, Greens Bayou/Harbor Island	Brown & Root, Greens Bayou/Harbor Island
Miss. Canyon 486A	1990	Steel	177	NA	NA	McDermott	McDermott
Phar Lap	1995	Steel	205	NA	NA	USA	USA
Salsa	1997	Steel	210	9,000	2,250	J. Ray McDermott, Morgan City	Aker Gulf Marine
Snapper	1986	Launch	263	18,600	NA	McDermott	McDermott
South Pass 52A	1991	Lift	162	2,750	1,074	McDermott	McDermott
Spectacular Bid A	1995	Steel	160	NA	NA	USA	USA
Spirit A	1998	Launch	220	8,800	NA	Aker Gulf Marine, Ingleside, TX	Unifab, New Iberia, LA
Tequila	1984	Launch	201	6,300	1,900	Brown & Root, Harbor Island, TX	Brown & Root
Tick	1991	Launch	219	10,000	2,000	Gulf Island Fabrication/Microperi (JV), Houma	Twin Brothers Marine, New Iberia, LA

Notes: Steel = Steel jacket, installation method not specified
Lift = Steel jacket, lift installed
Launch = Steel jacket, barge launch installed

Source: Oilfield Publications Limited, 2004 (Fourth Edition), *The World Offshore Field Development Guide, Volume 3, The Americas.*

Table MR 3-2
Deepwater Gulf of Mexico Platforms

Description	Year of Installation	Type	Water Depth (meters)	Jacket/Base Weight (metric tonnes)	Deck/Topsides Weight (metric tonnes)	Jacket/Base Contractor	Deck/Topsides Contractor
Allegheny	1999	Mini-TLP	1,008	NA	NA	Gulf Island Fabrication, Houma, LA	Gulf Island Fabrication, Houma, LA
Amberjack	1991	Launch	313	21,600	3,900	Gulf Marine Fabricators, Corpus Christ, TX	Brown & Root, Greens Bayou, TX
Atlantis	2005	Semisubmersible	1,829	NA	NA	Daewoo Heavy Industries, Okpo, South Korea (hull)	McDermott, Morgan City, LA
Auger	1994	TLP	872	20,000	12,700	Belleli, Taranto, Italy (hull)	McDermott (deck); Aker Gulf Marine (templates/quarters)
Baldplate	1998	Compliant Tower	503	25,847	3,582	J. Ray McDermott (tower base/piles); Aker Gulf Marine (tower)	Aker Gulf Marine
Boomvang	2002	Truss Spar	1,053	10,000	5,600	Aker Mantyluoto, Pori, Finland	McDermott (deck); Houma Industries (production packages)
Brutus	2001	TLP	910	12,245	19,955	Daewoo Heavy Industries, Okpo, South Korea	J. Ray McDermott, Amelia (deck/five modules)
Bullwinkle	1988	Launch	411	49,375	6,000	Bullwinkle Construction (GMF/Kaiser Steel JV), Ingleside Point	McDermott Marine Construction
Cognac	1978	Launch	313	30,500	NA	McDermott	McDermott
Cooper	1995	Semisubmersible	668	NA	NA	HAM Marine, Pascagoula, MS (rig conversion)	HAM/McDermott (topsides modifications)
Devils Tower	2003	Truss Spar	1,710	NA	NA	McDermott, Batam Island, Indonesia	McDermott TNG Shipyard, Veracruz, Mexico
Front Runner	2004	Truss Spar	1,066	NA	NA	McDermott, Jebel Ali, UAE	Gulf Island Fabrication, Houma, LA (subcontracted from McDermott)
Genesis	1998	Spar	780	29,000	16,000	Rauma Offshore Contracting, Pori, Finland	J. Ray McDermott, Morgan City; Southport Inc. (quarters)
Gunnison	2003	Truss Spar	960	12,500	NA	Technip Mantyluoto Works Oy, Pori, Finland	Gulf Island Fabrication, Houma, LA
Holstein	2003	Truss Spar	1,324	NA	NA	Technip Mantyluoto Works Oy, Pori, Finland (hard tank); Gulf Marine Fabricators, Ingleside, TX (truss)	McDermott, Morgan City, LA
Hoover	1999	Spar	1,463	35,400	16,000	Aker Rauma Offshore, Mantyluoto, Finland	Brown & Root, Greens Bayou, TX
Horn Mountain	2002	Truss Spar	1,647	37,000	NA	Technip Mantyluoto Works Oy, Pori, Finland	Gulf Marine Fabricators, Ingleside, TX
Jolliet	1989	TLP	536	NA	NA	Far East Levingston Shipbuilding, Pioneer Yard, Singapore	Far East Levingston Shipbuilding, Main Yard, Singapore
Lena	1983	Compliant Tower	305	NA	NA	Brown & Root, Port Aransas, TX	McDermott (deck); Enstar Engineering (modules)
Mad Dog	2003	Truss Spar	2,055	NA	NA	Technip Mantyluoto Works Oy, Pori, Finland	McDermott, Morgan City (topsides); TBA (quarters)
Magnolia	2004	TLP	1,425	NA	NA	Samsung Heavy Industries, South Korea (hull)	Gulf Marine Fabricators, Ingleside, TX (topsides)
Marco Polo	2003	TLP	1,311	NA	NA	Samsung Heavy Industries, South Korea	Kiewit Offshore Services, Ingleside, TX (piles, tendons, topsides)
Marlin	1999	TLP	979	9,000	6,500	Belleli, Taranto, Italy	Aker Gulf Marine, Corpus Christi, TX
Mars	1996	TLP	896	15,560	14,940	Keppel Fels, Singapore	Gulf Marine Fabricators, Ingleside, TX
Matterhorn	2003	Mini-TLP	869	5,440	6,060	Keppel Fels, Singapore	Gulf Marine Fabricators, Ingleside, TX
Medusa	2003	Truss Spar	677	NA	NA	McDermott, Jebel Ali, UAE	McDermott TNG, Veracruz
Morpeth	1998	Mini-TLP	518	2,500	4,000	Gulf Island Fabrication (hull)	Gulf Island Fabrication (deck); Hanover (separation equipment)
Na Kika	2003	Semisubmersible	1,920	18,000	18,000	Hyundai Heavy Industries, Ulsan, South Korea	Hyundai Heavy Industries, Ulsan, South Korea
Nansen	2002	Truss Spar	1,122	NA	NA	Aker Mantyluoto, Pori, Finland	McDermott (deck); Houma Industries (production packages)
Neptune	1996	Spar	588	11,000	4,500	Rauma Offshore Contracting, Pori, Finland	J. Ray McDermott, Morgan City
Petronius	1998	Compliant Tower	535	30,000	8,000	J. Ray McDermott, Morgan City (tower)	Gulf Island Fabrication, Houma (deck/intergration)
Pompano	1994	Launch	393	NA	NA	McDermott, Harbor Island/Morgan City	McDermott, Morgan City
Prince	2001	Mini-TLP	454	NA	NA	Amfels, Brownsville, TX (hull); Aker Gulf Marine, Ingleside, TX (tendons/piles)	Omega Natchiq, New Iberia (deck/topsides)
Ram-Powell	1997	TLP	981	15,000	NA	Belleli, Taranto, Italy	McDermott, Morgan City
Red Hawk	2004	Cell Spar	1,615	NA	NA	Gulf Marine Fabrication, Ingleside, TX	Gulf Marine Fabricators, Ingleside, TX
Thunder Horse	2005	Semisubmersible	1,859	120,000	40,000	Daewoo Shipbuilding, Okpo, South Korea	McDermott, Morgan City
Typhoon	2001	Mini-TLP	639	NA	NA	J. Ray McDermott, Morgan City	J. Ray McDermott, Morgan City
Ursa	1999	TLP	1,050	28,000	35,000	Belleli, Taranto, Italy	J. Ray McDermott, Morgan City (modules)
Virgo	1999	Launch	344	22,675	4,000	Aker Gulf Marine, Ingleside, TX	Aker Gulf Marine, Ingleside, TX

Note: The weight numbers for the Na Kika are apparently in error.

Source: Oilfield Publications Limited, 2004 (Fourth Edition), *The World Offshore Field Development Guide, Volume 3, The Americas*, with modifications based on Marshall DeLuca, "Deep Developments Taking Shape" (*Offshore Engineer*, April 2, 2003) and Marshall DeLuca, "The World in Depth" (*Offshore Engineer*, April 1, 2004).

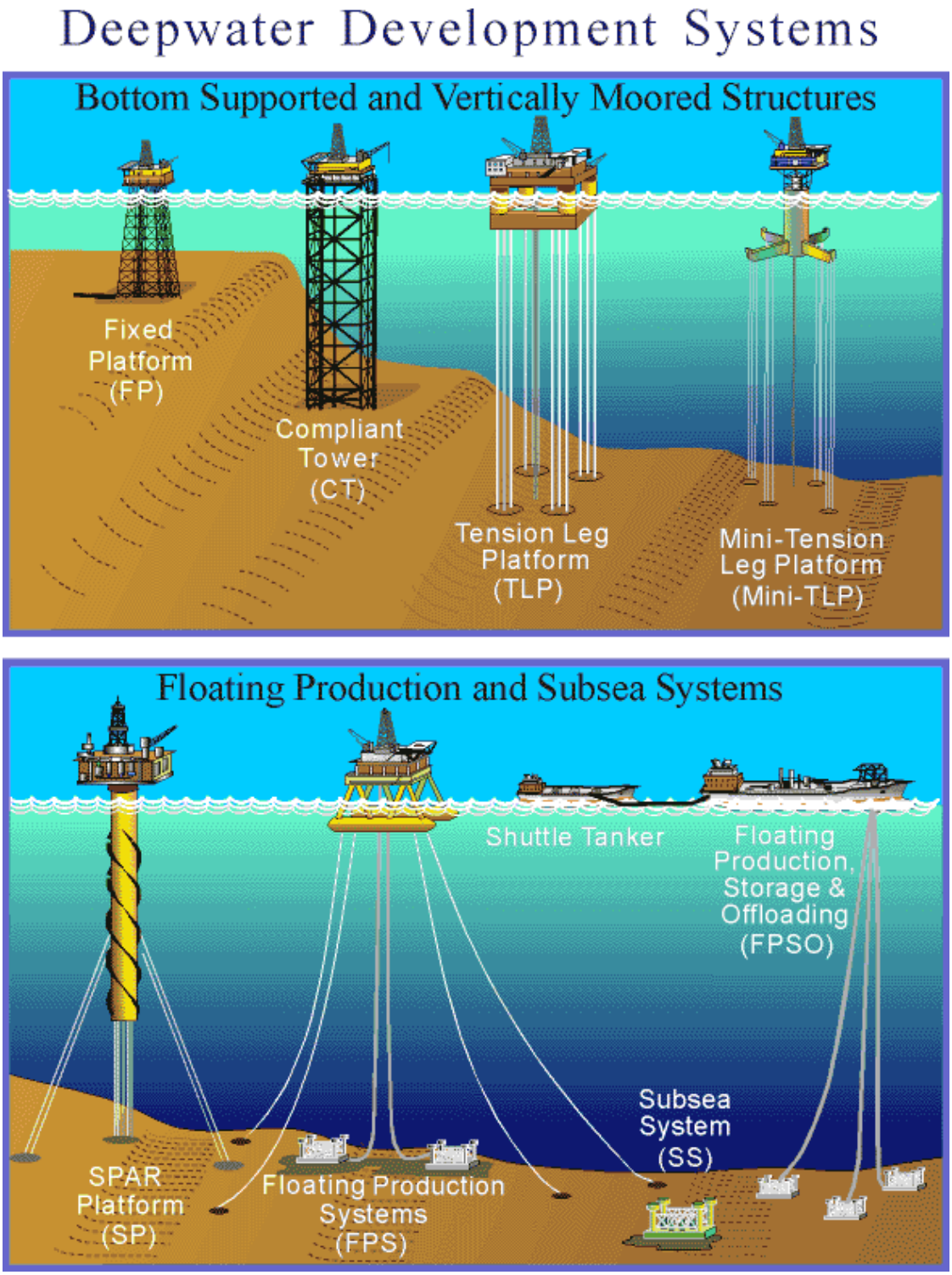

Figure MR 3-1 Deepwater Development Systems

3.1.3.1 Deepwater Jackets

There is heavy participation of foreign yards in the Gulf of Mexico deepwater jacket market, particularly with respect to the new platform types that have been developed specifically for deepwater. Of the 39 platforms in operation in the Gulf of Mexico, U.S. fabricators constructed the 6 jackets that are located in the shallowest water. Of the remaining 33 platforms, only 8 jackets were constructed in the U.S. and 26 were constructed in foreign yards. There is no evidence of foreign competition for deepwater conventional platforms in the Gulf of Mexico.

3.1.3.2 Compliant Towers

The only three Compliant Towers completed worldwide have been installed in the Gulf of Mexico. Gulf of Mexico fabricators constructed all the towers and topsides. The Baldplate is the tallest freestanding structure in the world, at 579.7 meters from seabed to top of flare. Compliant Towers are structurally similar to conventional platforms, and there is no evidence of foreign competition for Compliant Towers in the Gulf of Mexico.

3.1.3.3 Tension Leg Platforms

There are nine Tension Leg Platforms in the deepwater Gulf of Mexico. The topsides of all of these structures were fabricated by Gulf of Mexico yards, with the exception of Jolliet, which was constructed entirely by Keppel Fels in Singapore. Foreign firms constructed all of the TLP hulls, despite the fact that most of the TLPs in deepwater worldwide are located in the Gulf of Mexico. John Stiff and Joachim Singlemann in the MMS publication “Economic Impact in the U.S. of Deepwater Projects: A Survey of Five Projects” indicate that TLP hulls have not been built by Gulf of Mexico fabricators because there are not many shipyards that can competitively undertake that sort of plate construction on a large scale.

There are five Mini-Tension Leg Platforms in the Gulf of Mexico. As the name indicates, Mini-TLPs are smaller versions of TLPs that were designed to reduce platform costs for small or marginal fields in benign environments such as the Gulf of Mexico. The topsides and hulls of all of the Mini-TLPs were constructed by Gulf of Mexico fabricators, with the exception of the Matterhorn hull, which was constructed by Keppel Fels in Singapore. Of the remaining four hulls, two were constructed by Gulf Island in Houma, one by McDermott in Morgan City, and one by Amfels in Brownsville, Texas. Stiff and Singelmann indicate that Gulf of Mexico fabricators are still at an advantage over foreign competition for Mini-TLPs because of the cost and danger of ocean transportation.

3.1.3.4 Spars

There are 13 spars in the deepwater Gulf of Mexico. Gulf of Mexico fabricators constructed all of topsides of the 13 spars. However, all of the hulls were produced by foreign fabrication yards, with the exception of the Red Hawk cell spar, which was

produced by Gulf Marine at Ingleside along with the truss portion of the Holstein spar. Unlike other floating production systems such as TLPs, spar topsides have to be installed offshore after the hull has been upended and installed. All of the existing spars worldwide are located in the Gulf of Mexico, and the Gulf of Mexico is expected to have more spars in the near future. MMS in its May 2004, "Deepwater Gulf of Mexico 2004: America's Expanding Frontier" indicates that the hull of conventional spars and the cylindrical portion of the truss spars that are located in the Gulf of Mexico were all constructed in foreign yards because they require large-diameter, steel-plate rolling machines. In contrast, the smaller-diameter cylinders of the cell spar can be fabricated using rolling machines that are readily available in most U.S. shipyards.

3.1.3.5 Semi submersibles

There are four semi submersibles in the deepwater Gulf of Mexico. Stiff and Singlemann indicate that conversion of semi submersibles from drilling to production units can be accomplished at any yard capable of constructing or servicing drilling units. They also indicate that few Gulf of Mexico facilities have the size or experience to build large, deep-draft semi submersibles.

Table MR 3-3 is derived from MMS's October 2004, "Gulf of Mexico Oil and Gas Production Forecast: 2004-2013" and provides a picture of the development of Gulf of Mexico subsea completions compared to the various platform types, which are displayed by production year rather than installation year as in the deepwater platforms table. As shown in **table MR 3-3**, subsea completions became important in the early 1990s and have increased in importance over time.

Table MR 3-3
Gulf of Mexico Deepwater Production Facilities

Year	Fixed Platform	Compliant Tower	TLP	Mini-TLP	Spar	Truss Spar	Semisubmersible	Total Platforms	Subsea
1979	**1**	0	0	0	0	0	0	**1**	0
1980	0	0	0	0	0	0	0		0
1981	0	0	0	0	0	0	0		0
1982	0	0	0	0	0	0	0		0
1983	0	0	0	0	0	0	0		0
1984	0	**1**	0	0	0	0	0	**1**	0
1985	0	0	0	0	0	0	0		0
1986	0	0	0	0	0	0	0		0
1987	0	0	0	0	0	0	0		0
1988	0	0	0	0	0	0	**1**	**1**	0
1989	**1**	0	**1**	0	0	0	0	**2**	0
1990	0	0	0	0	0	0	0		0
1991	**1**	0	0	0	0	0	0	**1**	0
1992	0	0	0	0	0	0	0		**1**
1993	0	0	0	0	0	0	0		**2**
1994	**1**	0	**1**	0	0	0	0	**2**	**2**
1995	0	0	0	0	0	0	**1**	**1**	**2**
1996	0	0	**1**	0	0	0	0	**1**	**3**
1997	0	0	**1**	0	**1**	0	0	**2**	**2**
1998	0	**1**	0	**1**	0	0	0	**2**	**3**
1999	**1**	0	**2**	**1**	**1**	0	0	**4**	**7**
2000	0	**1**	0	0	**1**	0	0	**2**	**6**
2001	0	0	**1**	**2**	0	**1**	0	**4**	**12**
2002	0	0	0	0	0	**2**	0	**2**	**13**
2003	0	0	0	**2**	0	**2**	**1**	**4**	**9**
2004	0	0	**2**	0	**1**	**3**	0	**6**	**8**

Source: MMS, October 2004, *Gulf of Mexico Oil and Gas Production Forecast: 2004-2013* , modified by January 31, 2005, MMS press release "Gulf Deepwater Sees Major Advance in 2004."

3.1.4 Major Gulf of Mexico Fabricators Outside the POI – Domestic

While POI fabricators are not major competitors for deepwater hulls, they will continue to compete for topside contracts. Major competitors to the POI for the fabrication of platform topsides installed in the Gulf of Mexico in water depths greater than 300-feet are Technip, McDermott, and Kiewit. In addition, Gulf Island and other fabricators compete for platform jackets in Gulf of Mexico intermediate water depths (150 - 300-feet). In the Gulf of Mexico analysis, these firms are referred to as the "Big Four." Note that at the time of this report, one of the Big Four fabricators is in the process of purchasing another of the Big Four fabricators. The potential POI share of the market for topsides for these four facility types is evaluated against the background of:

- Analysis of production platforms in the Gulf of Mexico and worldwide and participation of Gulf of Mexico fabricators in shallow and deep water projects worldwide

- Description of POI and other Gulf of Mexico fabrication yards, their capacity and experience, and some indication of the dimensions and operations of foreign yards

- Presentation of best available information from public and private sources on total and deepwater oil and gas worldwide and in the Gulf of Mexico

- Public agency and private sector analyses of short-term and long-term markets for production platform topsides, including a special analysis that was commissioned for this study

- Analysis of the competitive environment of POI fabricators based on interviews with the major fabricators in Louisiana and Texas.

3.1.4.1 Gulf Island Fabrication, Inc.

Gulf Island Fabrication, Inc. is located in Houma, Louisiana, along the Houma Navigation Canal, which provides an authorized depth of 15-feet. Sales of structures used in the Gulf of Mexico during the last five years accounted for 81 percent of company revenues, with the remainder accounted for by structures installed in offshore Canada, West Africa, Latin America, and the Caribbean. In 2004, Gulf Island began fabrication of the 5,900-ton topsides for the Kerr-McGee Constitution Spar (will be installed in 5,000-feet of water), completed a 7,000-ton topside (will be installed on a Spar in 3,330-feet of water), and completed an 8,700-ton jacket, all of which will be installed in the Gulf of Mexico.

3.1.4.2 Gulf Marine Fabricators (Technip)

Gulf Marine Fabricators is located in the Corpus Christi, Texas area and is part of the Paris-headquartered international firm Technip. Gulf Marine designs and builds drilling platforms, gas-processing plants, refineries, and petrochemical plants in two yards located in the Corpus Christi area. The North Yard at Ingleside is a 160-acre component

and small structures fabrication facility located on the Intracoastal Waterway three miles from the Corpus Christi Ship Channel. The South Yard at Aransas Pass is referred to as "The Deepwater Facility" because of its immediate access to the 45-foot deep Corpus Christi Ship Channel. Located at the intersection of the Corpus Christi Ship Channel and the Intracoastal Waterway, the South Yard encompasses 200 acres. *Note: At the time of this report Gulf Island Fabrication, Inc. has executed an agreement with Technip-Colflexip USA Holding, Inc. for purchase of all facilities, machinery and equipment of Technip-subsidiary, Gulf Marine Fabricators, located near Corpus Christi, Texas. This reduces the number of the larger (non-POI) firms in competition for deepwater projects, but does not reduce the yard capacity among the remaining larger fabricators.*

3.1.4.3 Kiewit

The Kiewit yard in Ingleside, Texas, is part of Kiewit Offshore, which is part of Peter Kiewit Sons. Kiewit Offshore Services is a steel fabricator for the offshore oil and gas industry. The Ingleside facility encompasses 400 acres on the 45-foot deep LaQuinta Channel in the Corpus Christi area. Kiewit also has two yards in Canada that were used to construct offshore projects or as joint ventures in the Gulf of Mexico prior to the acquisition of the Ingleside facility.

3.1.4.4 McDermott

McDermott International, Inc. is an energy services company that provides engineering, procurement, and project management. J. Ray McDermott is a subsidiary that operates in most of the major offshore oil and gas producing regions worldwide, including the Gulf of Mexico, Mexico, South America, the Middle East, India, the Caspian Sea, and Asia Pacific. McDermott's main yard is in Morgan City. However, it also operates yards in the Corpus Christi area (Harbor Island); Veracruz, Mexico (Talleres Navales del Golfo, generally referred to as TNG); Dubai, United Arab Emirates (Jebel Ali); and Batam Island, Indonesia (Batam Island). J. Ray McDermott is well known as having produced more offshore platforms than any other firm in the world.

- The TNG yard in Veracruz is largely a shipbuilding and repair facility that occasionally is involved in fabrication activities either alone or in conjunction with the Morgan City yard. The access depth is 42-feet.

- The Harbor Island yard is located near Aransas Pass and has a 45-foot deep access channel. Prefabricated components are sent from Morgan City by way of the GIWW to the Harbor Island yard, where they are assembled because the site easily accommodates tow out of very large structures, the largest of which has been 32,652 tons. This yard is presently inactive because of a lack of business.

- The Morgan City yard is located on a 20-foot access channel, and has a total area of 589 acres and a developed area of 287 acres. These large areas can simultaneously accommodate numerous projects of different types and sizes. For example, the southeast yard accommodated three deepwater structures of 1,000-feet, 750-feet, and

680-feet concurrently. The largest jacket and topsides fabricated by the Morgan City yard weighed 26,000 tons and 23,000 tons, respectively.

3.1.5 Major Gulf of Mexico Fabricators outside the POI – Foreign Yards

Among the foreign fabricators that participated in deepwater Gulf of Mexico projects (largely through hull construction) were the South Korean firms Daewoo, Hyundai, and Samsung; Keppel Fels in Singapore; Belleli in Italy (now extinct); and McDermott's foreign yards. Although these are some of the largest players in the offshore platform fabrication industry (including shallow water conventional platforms and floaters), they represent only a small percentage of the firms involved in that industry.

All of the foreign yards that were involved in deepwater Gulf of Mexico projects are owned by international competitors and can be characterized as having large workforces, oriented on shipbuilding as well as platform fabrication, and with deepwater access. It is obviously impossible within the context of this report to characterize all of the foreign competitors to U.S. platform fabricators.

The degree of competition in a market that is important to U.S. fabricators can be illustrated by Angola, West Africa. Of the 128 shallow water conventional platforms offshore Angola, the Gulf of Mexico fabricators provided the jackets and topsides on 25 projects, only the jacket on one, and only the topsides on two. Foreign fabricators participated in 86 shallow water projects, including French, Nigerian, Angolan, Portuguese, South African, South Korean, and Brazilian yards.

3.1.6 Significant Resources

A resource is considered significant if it is identified in the laws, regulations, guidelines, or other institutional standards of national, regional, and local public agencies; if it is specifically identified as a concern by local public interests; or if it is judged by the responsible Federal agency to be of sufficient importance to be designated as significant.

This section contains a summary of the existing conditions of significant resources in the study area. Detailed information regarding significant resources is located in the FEIS and the Environmental Appendix (**Appendix B**).

3.1.6.1 Marsh

Marshes of the study area provide habitat and a food source for fish and wildlife species. The study area is comprised primarily of fresh, intermediate, and brackish marshes. The marshes serve as a sediment trap, wildlife habitat and as an estuarine fish and shellfish nursery. Marsh vegetation contributes organic detritus, which forms the basis of the estuaries food chain. The marsh also provides an important wintering and stop over point for migratory waterfowl and neotropical migrants, as well as habitat for wading and shore birds.

Extensive areas of marsh throughout coastal Louisiana have converted to shallow open water as a result of soil subsidence, bank erosion, saltwater intrusion, decreased sediment input, sea-level change, and herbivory (Turner 1990). The average rate of sea-level change is currently 0.39-feet per century and is expected to continue to increase (Dean 1987). The current rate of sea level change along the gulf coast is about 0.72-feet per century (Barnett 1984). Most researchers project that the rate is increasing, and will continue to increase into the 21st century. Some areas of marsh that have been enclosed with levees to control water levels, reduce saltwater intrusion, and delineate property lines, have suffered marsh loss. Marsh loss in these areas can be attributed to anoxia in the marsh soil from constant flooding, as well as herbivory from fur-bearing animals. A more detailed description of the marshes in the study area and the associated fish and wildlife resources is presented in **Appendix B**. **Table MR 3-4** shows the impacts to marsh types for the existing conditions, No Action Plan, and recommended plan.

Table MR 3-4
Impact Comparisons by Habitat Type

Habitat Types	Existing Conditions		No Action *TY - 50		Recommended Plan *TY - 50	
	Acres	HUs	Acres	AAHUs	Acres	AAHUs
Fresh Marsh	46	69.51	46	173.78	131	281.81
Intermediate Marsh	1247	1310.28	74	2450.8	2618	6578.09
Brackish Marsh	301	269.23	0	497.74	445	976.2
Marsh converted to upland	501	279.62	501	274.99	501	85.93
Shallow Open Water	239	541.34	383	1793.44	1324	3197.55
Other	2685	0#	4015	0#	0	0#
Total	5019	2470	5019	5191	5019	11120

**TY= Target Year*
 # WVA does not assign value to channel bottom and deepwater bay habitat

3.1.6.2 Essential Fish Habitat

Specific categories of EFH (http://www.gsmfc.org/efh/html) include all estuarine water and substrates (mud, sand, shell, rock, and associated biological communities), including the sub-tidal vegetation (sea grasses and algae) and adjacent inter-tidal vegetation (marshes and mangroves). Most of the project area, unless previously impounded, fits into one of these categories. The Gulf of Mexico Fishery Management Council lists the following Federally managed species or species groups as being potentially found in coastal Louisiana: brown shrimp, white shrimp, red drum, Spanish mackerel, and gray snapper.

The proposed project is located in an area identified as EFH for post larval, juvenile, and sub-life stages of white shrimp and brown shrimp; post larval, juvenile, and sub-adult red drum; juvenile, sub-adult, and adult Spanish mackerel; juvenile grey snapper, juvenile and sub-adult bluefish; and larval and adult cobia.

Categories of EFH in the project area include estuarine and near shore marine areas. Estuarine areas include estuarine wetlands, estuarine water column, submerged aquatic

vegetation, and estuarine water bottoms. Marine areas include the near shore (beach) and shelf out to the 4-mile limit offshore of the study area.

3.1.6.3 Estuarine Water Bodies

The estuarine water bodies of the study area consist of brackish to saline lakes, bays, ponds, lagoons, canals, bayous, and tidal passes. The salinities in these waters range from 0.2 to 35 parts per thousand (ppt), with unusually heavy local rainfall and/or high discharges from the Atchafalaya River depressing salinity levels below 5 ppt. The water bottoms are mostly composed of sand, silt, and mud.

Estuarine waters of the study area support many commercially and recreationally important fish and shellfish species. Species include spotted sea trout, red drum, black drum, southern flounder, menhaden, brown shrimp, white shrimp, and blue crab. Freshwater species found in the study area include catfish, drum, buffalo, gar, carp, bowfin, bass, bluegill, crappie, warmouth, and sunfish. Oysters are harvested, to a limited degree, within the southern reaches of the study area. Some oyster leases exist on the south side of Marsh Island, but remain outside of the study area. Weeks Bay has historically been listed as a public oyster seed ground. However, oyster production within Weeks Bay is virtually nonexistent because of lower salinity waters rending the area less than optimal for oyster production. Estuarine waters within the project area are affected by riverine influences of the Vermilion River from the north, the Atchafalaya River from the east and tidal influences of the Gulf of Mexico to the south.

3.1.6.4 Beaches

The study area contains a small beach/shoreline extending east and west from the mouth of FWB at the Gulf of Mexico. The soils are a mixture of sand, clay, and shell fragments. Beaches and shorelines within the study area are typically long and narrow and continually washed and reworked by wave action, with the higher areas covered by debris washed in during high tides and storm events. This area is used for limited recreational purposes due to accessibility. The beach eastward of the mouth of FWB is a resting area for the piping plover.

3.1.6.5 Gulf of Mexico Water Bottoms

The water depth in the study area ranges from less than one foot to about 20-feet in the Gulf of Mexico at the seaward boundary of the deepest channel alternative. Bottom sediments are composed of sand, silt, clay, shell, and organic detritus. The salinity in the study area varies from 5 to 35 ppt due to tides, storms and hurricanes, rainfall, and freshwater discharge. Freshwater input from local rainfall, Vermilion River and the Atchafalaya River may occasionally create surface salinities considerably lower than bottom salinities. The gulf water bottom provides essential benthic habitat for fish, shrimp, and crabs. Shrimp and crabs typically migrate on the bottom during the day and on the surface during the night. Most fish species, which spawn in the near-shore gulf, select bottom habitats where adequate depth and salinity is present.

3.1.6.6 Threatened and Endangered Species

In accordance with the Endangered Species Act, the USFWS and the National Marine Fisheries Service (NMFS) were contacted to determine if any threatened or endangered species occur in the study area. Threatened and endangered species listed by the USFWS for the study area include black bear, brown pelican, and the piping plover. The jurisdictional NMFS Endangered and Threatened Species list for Louisiana includes the blue whale, finback whale, humpback whale, Sei whale, sperm whale, West Indian Manatee, gulf sturgeon, green sea turtle, hawksbill sea turtle, Kemp's ridley sea turtle, leatherback sea turtle, and loggerhead sea turtle. All species are classified as "Known" occurrence. Note: The NMFS list is of the Federally protected species under the jurisdiction of NOAA Fisheries and does not include the essential fish habitat consultation pursuant to the Magnuson-Stevens Fishery Conservation and Management Act.

Recent CEMVN formal consultation with NMFS with respect to the potential impacts of hopper dredge maintenance operations on endangered and/or threatened sea turtle species, and their critical habitat, resulted in the issuance of a Gulf Regional Biological Opinion (GRBO) on 19 November 2003 for the existing FWB project. An Incidental Take Statement was included in the 2003 GRBO. The use of cutterhead pipeline dredges for maintenance operations was determined not to have significant impacts on sea turtles and/or their critical habitat. A revision of the 2003 GRBO addressing changes to the Reasonable and Prudent Measures was issued on 24 June 2005.

3.1.6.7 Recreation

Recreational activities currently taking place in the study area, the adjacent shoreline, and nearby marshes include saltwater recreational fishing almost exclusively from motorized boats, limited pleasure boating and access for shore fishing because of the physical characteristics of the shoreline. In addition, in the project area consumptive recreation takes the form of waterfowl hunting and deer hunting.

Non-consumptive recreation is manifested by hiking and biking trails along the coast, numerous state parks and wildlife management areas and opportunities for bird watching and eco-tourism. Located in the project area are Cypremort Point State Park, Marsh Island National Wildlife Refuge, Paul J. Rainey Wildlife Sanctuary, Rockefeller State Wildlife Refuge, Salt Mines Bird Sanctuary Gardens, Avery Island, Attakapas Island Wildlife Management Area, and numerous other public facilities that allow for both consumptive and non-consumptive outdoor recreation.

3.1.6.8 Cultural Resources

The CEMVN conducted a cultural resources literature search and sample survey of the project area in 2004 (Lee et al. 2004). Thirty-two prehistoric sites were identified within a 10 percent sample of selected project areas totaling approximately 700 acres. Researchers analyzed sample survey results, developed a predictive model that identified additional

project areas exhibiting high probability for cultural resources, and prepared recommendations for additional cultural resources investigations. CEMVN plans to conduct these additional cultural resource investigations in the pre-construction engineering and design phase of this project. The State Historic Preservation Officer (SHPO) has been asked to comment on the draft cultural resources report prepared by CEMVN and coordination with the SHPO is ongoing.

Detailed information regarding the history and prehistory of the project area and specific recommendations for further cultural resource investigations can be found in Godzinski's 2004 draft report, which is on file at the Louisiana Division of Archaeology in Baton Rouge.

3.1.6.9 Socio-Economic Resources

Employment

Iberia Parish is more dependent on the petroleum industry as a source of employment than are most other parishes in Louisiana. During the mid-1980s, a downturn in the petroleum industry activity contributed to increased unemployment in Iberia Parish. From early in 1992, the petroleum industry has begun to slowly recover, but has experienced cycles of active and inactive periods.

Property Values

Previous port expansion has raised property values over undeveloped land.

Land Use

Land use of the study area is limited to the general vicinity of the POI and Intracoastal City. The POI is highly industrialized and surrounded by mostly agricultural land with some rural homesteads. Intracoastal City is highly industrialized with limited agriculture.

Some hunting and fishing camps are located along bayou and canals in the marsh areas. Business space at the POI is available but limited. Agricultural land is in close proximity and may be utilized for port business expansion. Some rural homesteads are present near the POI.

Farms

The study area contains farmland and agricultural activity along the northern reaches of the Commercial Canal, near FWB, and throughout Vermilion Parish. Certain upland agricultural tracts are being investigated as potential disposal sites.

Vermilion Parish contains the highest rice acreage in the state of Louisiana, which approaches 100,000 acres annually. Sugar cane farming also contributes to the local economy with approximately 4,000 acres of sugar plantations. Cattle ranches are prevalent throughout Vermilion Parish and encompass approximately 120,000 acres of

grazing lands. About 65 percent of the land used for cattle production is located south of Highway 335 and is subject the effects to saltwater intrusion.

Population/Displacement of People

A few rural homesteads are located in the general vicinity of the POI. A large percentage of people living in nearby communities work directly or indirectly for businesses associated with the petroleum industry.

3.1.6.10 Air Quality

Emissions from equipment, trucks, vessels, and activities of the major offshore petroleum support sectors of fabrication, repair, and service associated with the businesses of the POI are likely the primary source effecting air quality. The quantities of air pollutants generated by business activities at the port were not calculated, however the general project area is in full compliance for the one-hour ozone standard.

3.1.6.11 Hydrology and Water Quality

The Louisiana Water Quality Inventory (LAWQI) is the method used by the LDEQ to determine levels of support for various aquatic uses. The major uses include primary and secondary recreational contact, fish and wildlife propagation, drinking water supply, agriculture, and shellfish propagation. In general, the water quality of the study area was "fully supporting" most uses. However, fish and wildlife propagation, in particular, was identified as "not supporting." Suspected impairments include low dissolved oxygen from non-irrigated crop production and natural conditions, carbofuran (- a pesticide from irrigated and non-irrigated crop production), and mercury from atmospheric deposition and unknown sources. "Partial support" was identified in some waterway segments of the study area. The main use affected by this determination was fish and wildlife propagation. Suspected impairments include cadmium, copper, lead, metals, and mercury from unknown sources and atmospheric deposition. For the period of 1995-1999, the East and West Cote Blanche Bays were determined to be "not supporting" shellfish propagation due to fecal coliform counts. However, in 2002 the bays were determined to be fully supporting.

The U.S. Environmental Protection Agency (USEPA) uses the Index of Watershed Indicators (IWI) for classification of a watershed. The POI project area lies within the Teche/Vermilion Watershed. The Teche/Vermilion Watershed was classified as a "more serious problem – high vulnerability." Condition Indicators such as designed use (recreation), fish and wildlife consumption, and ambient water quality data (conventional pollutants) were ranked "more serious. Vulnerability Indicators such as Aquatic Species Risk, Agricultural Runoff, and Estuarine Pollution Susceptibility were ranked "high."

The LAWQI data reflects the USEPA IWI findings. However, "not supporting" ratings were more predominant in the upper reaches of the two watersheds, with "fully supporting" ratings more predominant in the study and project areas.

CHAPTER 4 ALTERNATIVES

4.1 PLAN FORMULATION

Plan Formulation is a dynamic process that begins with a broad scope, may change direction as new information is obtained, and focuses on the most effective means of addressing the problem. This is accomplished as costs, benefits, and impacts of various options become more clearly defined.

4.1.1 Plan Formulation Principles

The guidance for conducting Civil Works planning studies (ER 1105-2-100) requires the systematic development of alternative plans, which contribute to the Federal objective. Alternatives should be formulated in consideration of four criteria: completeness, effectiveness, efficiency, and acceptability.

- Completeness is the extent to which a given alternative plan provides and accounts for all necessary investments or other actions to ensure the realization of the planned effects. This may require relating the plan to the other types of public or private plans if the other plans are crucial to realization of the contributions to the objective.

- Effectiveness is the extent to which an alternative plan alleviates the specified problems and achieves the specified opportunities.

- Efficiency is the extent to which an alternative plan is the most cost effective means of alleviating the specified problems and realizing the specified opportunities, consistent with protecting the Nation's environment.

- Acceptability is the workability and viability of the alternative plan with respect to acceptance by state and local entities and the public and compatibility with existing laws, regulations, and public policies.

In addition, appropriate mitigation of adverse effects shall be an integral component of each alternative plan.

4.1.2 Plan Formulation Rationale

The plan formulation rationale is typically used to identify and evaluate a range of alternatives that would fully or partially satisfy the planning objectives identified previously. The POI, Louisiana Navigation Reconnaissance Report identified and evaluated a range of alternative alignments from the POI to the Gulf of Mexico and recommended a single economically feasible alignment for further analysis, known as the FWB Alignment. In feasibility, various channel dimensions were investigated to improve navigation to the port and facilitate the construction and transportation of larger, heavier deepwater platforms to the Gulf of Mexico. Seven channel dimensions were

considered initially for the selected alignment study. A preliminary screening was performed and one channel dimension was selected for detailed analysis. As the feasibility study progressed, more detailed information became available that the 100' x 400' x 25' molded barge was the industry preferred barge size to move topsides. This analysis also uses a scenario approach for the GOM market for deepwater production platforms over a 50-year period. It then allocates market share by dollar value to the POI fabricators in terms of possible scenarios that can be used by decision makers to evaluate the viability of the project. The feasibility analysis also compared the benefits and costs of rock dike placement along the bank line for the containment of dredge material to unconfined disposal along the bank line and in open water areas.

4.1.3 Alternative Plans

Alternatives formulated for the feasibility study involved multiple channel dimensions and dredge disposal options for the FWB Alignment. The alternatives were based on needs and requests from the local sponsor, cooperating resource agencies, proven concepts, historical data, and the recommendations from the Reconnaissance Report. The FWB Alignment incorporates four existing channels – Commercial Canal, west on the GIWW and then south on FWB to the Gulf of Mexico – in order to reduce costs.

A Value Engineering Study was completed during the development stage of the feasibility study, at which time a non-structural alternative was investigated. This scenario involved relocating applicable major fabricators to a new location south of Freshwater Bayou Lock. The major concern with this alternative was the lack of existing infrastructure to support a facility south of the current location of the Port of Iberia. This relocation would require the construction of new highways capable of supporting large trucks and employee and visitor vehicles. Additionally, the Port of Iberia is currently serviced by railroad lines, which would not be available for a new facility south of the current Port location. Considering the costs for such infrastructure improvements, the alternative was not considered further in the VE study.

Several alternatives existed for routing POI vessel traffic to the Gulf of Mexico (Coastal Engineering and Environmental Consultants, Inc. 2001 and USACE August 2002). All alternatives used the existing channel, known as the Commercial Canal, and connected with the GIWW. The first alternative was to route vessel traffic west on the GIWW and south through the Vermilion River Cutoff to the Gulf of Mexico. The second alternative was to route the vessel traffic southwest through Vermilion Bay and into the Gulf of Mexico. The third alternative was to route vessel traffic east on the GIWW and south through the Lower Atchafalaya River. Cursory investigations that explored the maintenance of navigation channels through Vermilion Bay and the Lower Atchafalaya River revealed that the existence of fluid mud rendered these channels inefficient and, in the case of Vermilion Bay, increased the likelihood of saltwater intrusion. The Lower Atchafalaya River route requires an increased travel distance and would likely incur added transportation delays because of existing structures. Thus, enough information existed to rule out these three alternatives from further study.

4.2 FINAL ARRAY OF ALTERNATIVES

4.2.1 Channel Width and Depth

Channel widths and depths are designed to provide for the safe and efficient movement of vessels along the channel. Design criteria require that sufficient width be provided in the channel to accommodate the beam width of the design vessel for maneuverability under normal velocity conditions, and include additional width for bank clearance on each side of the vessel. In straight channels, the vessel beam width can be used to determine the width of the maneuvering lane. Typically, for one-way traffic in straight channels 40-feet must be added to each side of the vessel width to provide adequate bank clearance. However, the maritime industry in the study area is functioning with narrower channel clearance. Therefore, the proposed channel width must provide minimum safe navigation conditions for a majority of the vessels in general use along the waterway.

Several proposed channel dimensions were evaluated based on current traffic patterns and projected vessel sizes: -16-feet x 150-feet, -18-feet x 150-feet, -18-feet x 135-feet, -18-feet x 125-feet, -20-feet x 150-feet, -20-feet x 135-feet, and -20-feet x 125-feet NAVD88. The channels are currently used by a variety of vessels: crew and service boats; small oil tankers, tow boats both with and without barges; professional fishing vessels; and recreational vessels. Vessel dimensions are used to determine both depth and width of a navigation channel. Some typical dimensions are presented in **table MR 4-1**.

Table MR 4-1
Typical Vessels

VESSEL TYPE	DESCRIPTION	MAXIMUM DIMENSIONS *(in feet)*		
		Length	**Beam**	**Draft**
Dry Cargo	Crew/Service Boat	325	55	18*
Tanker	Small Oil Tanker	n/a	n/a	12
Tow Boat	Tow Boats w/o Barges	250	90	12
Dry Cargo	Barges w/Tow Boats	400	100	20**
Tanker	Barges w/Tow Boats	250	75	13

* *Design draft for this vessel. Currently light loaded to a 13-foot draft, due to depth limitations in existing channels.*
** *Design vessel*

A preliminary screening was performed on the various dimensions and one channel dimension was selected for detailed analysis. The 125-foot and 135-foot wide channels were screened out due to benefit to cost ratios much less than unity and due to safety issues. Information from various EMs indicate that safer and quicker transportation will take place in a larger channel. Even so, the 150-foot wide channel required a waiver for a tow simulation model (See **Appendix C 1**). Also, based on traffic analysis obtained from a Traffic Study prepared for the CEMVN, it was determined that the 150-foot channel would adequately address the criteria associated with the majority of vessel traffic using the project and therefore, was the maximum channel width evaluated in the economic

analysis and the Environmental Impact Statement.

It is important to note, however, that for this project, the design vessel is a special offshore petroleum industry barge that is 100-feet wide by 400-feet long, and has a design draft of 20-feet. Movements for this design vessel are constrained to 2 to 3 times per year at approximately 2 miles per hour under with-project conditions.

Standard design criteria for determining bottom width and channel depth of shallow and deep draft channels are outlined in EM 1110-2-1611 and EM 1110-2-1613, respectively. In both EMs, the minimum width of a channel is based on a number of factors, including vessel maneuverability, climatic conditions, and channel shape and alignment. The minimum depth of a channel is also based on a number of factors, including vessel squat, sinkage in fresh water, effects of trim and wave action, and safety and efficiency clearance.

The existing channel is shallow (El. -12.0-feet MLG), and the existing authorized bottom width of the channel is 125-feet. These dimensions are smaller than required by the EMs for the typical vessels in both shallow-draft and deep-draft channels. The channel sizes investigated and proposed in this report also do not meet the design criteria in the EMs for the large cargo vessel identified as the design vessel. However, to pass this large design vessel through a 20-foot deep channel, special accommodations can be made, as is done currently to allow usage of restrictive channels with no safety issues. This vessel does not maneuver under its own power, but rather is pushed and pulled very slowly downstream by several tugboats. Because the barge moves so slowly, the width dimension can be encroached upon somewhat without much surrendered for safety or bank damage. Additionally, trips along the channel for this vessel are infrequent and limited to ideal weather conditions and high tide conditions. The average daily high and low water elevations in Freshwater Bayou north of the lock are 0.0-feet NAVD88 and 1.3-feet NAVD88, respectively; south of the Lock, the corresponding elevations are -0.9-feet NAVD88 and 1.4-feet NAVD88 (see **Table C4** in **Appendix C 1**). Interviews with industry indicate that the 100-foot x 400-foot barge would be ballasted to a 19-foot draft (see Annex 4 in **Appendix C 1**). Thus, the clearance under the barges north of the Lock will range between 1-foot and 2.3-feet if the barge is brought out during normal daily conditions. The clearance under the barges south of the Lock, where the design depth is -21-feet NAVD88, will range between 1.1-feet and 3.5-feet, again if the barge is brought out during normal daily conditions. Therefore, this report concludes that the channel dimensions proposed in this report will be sufficient for the safe conduct of navigation for the identified design vessel. To ensure safe passage, special accommodations as previously described must be maintained.

For designs where the recommended width of a proposed navigation channel is smaller than the minimum dimensions derived from criteria established in EMs, the EMs prescribe that a tow simulation model be conducted. Engineering Regulation 1110-2-1403, "Studies by Coastal, Hydraulic and Hydrologic Facilities and Others", states that hydraulic design studies associated with the planning, design, construction, operation, and maintenance of navigation channels will include a ship-simulation investigation

unless omission of such an investigation is approved by HQUSACE. In November 2005, MVN requested such a waiver for the proposed Port of Iberia, Louisiana navigation channel. To support HQUSACE with their decision, the Engineering Research and Development Center (ERDC) in Vicksburg, Mississippi conducted a desktop study. During the course of this study, ERDC and MVN met on-site with representatives from the Port of Iberia (POI), the local navigation industry, and manufacturers located in the POI to discuss their methods of loading and transporting large packages from the Port to the Gulf of Mexico. During this visit and subsequent discussions, ERDC gained an understanding of how delivery barges are transported, how much caution and oversight are used during transport, the number of tows used, and the speeds attained during the transit. ERDC concluded that a tow simulation model was not required. On 9 February 2006, the Chief, Engineering and Construction, Directorate of Civil Works, granted the waiver.

4.2.2 Dredged Material Disposal Plan Formulation

The majority of the marshes within the project area are healthy in comparison to other basins along coastal Louisiana, thus dredge material disposal presented one of the biggest challenges of this study. In response to the problems, needs, and opportunities related to marsh loss and erosion in the study area, the CEMVN, and other resource agencies assumed that dredged material excavated from the inshore channels for the construction and maintenance of this project would be confined behind rock dikes and used to reestablish the bank line of the eroding channels. Any material not accommodated in the confined bank line disposal area, would then be used for wetland restoration in broken marsh areas and shallow open water areas. The CEMVN also performed an analysis of the selected channel dimensions using unconfined disposal along the adjacent bank and into open water areas.

In all cases, some of the material excavated from Commercial Canal would be placed in a designated upland disposal site on the west bank of the Commercial Canal. Another upland disposal area adjacent to the lock and bypass channel would be used to maintain the integrity of the structure. All dredged material excavated from the offshore channel up to four miles from the shoreline, would be disposed of immediately adjacent to the shoreline in the Gulf of Mexico in order to nourish the beach with new material, which is the least-cost environmentally acceptable plan.

The least-cost environmentally acceptable plan would make the project self-mitigating since the planned disposal compensates for any environmental damage that may result from the project.

4.3 COMPARISON OF ALTERNATIVES

4.3.1 Alternative Analysis

The FWB Alignment requires the enlargement of the existing -12 foot MLG navigation channel that extends from the POI, through the Commercial Canal, then along the GIWW to FWB, and then through FWB to the Gulf of Mexico to various widths and depths. Initially seven channel dimensions were evaluated as shown in **table MR 4-2**. The different channel dimensions were essentially increments of the same overall plan, although the channel sizes differed in the cost to implement and maintain them and in the economic benefits that they would produce. The overall plan would provide for the enlargement of inshore channels and the FWB Bar Channel in the Gulf of Mexico from the gulf shoreline approximately 4 miles out, depending on the project depth and bottom width, and two new floodgates for salinity control and navigation – one at each end of the FWB Bypass Channel.

Table MR 4-2
Initial Channel Sizes Considered[1]

Channel Alternative	Inshore Channel Width	Offshore Channel Depth[1]	Inshore Channel Length	Offshore Channel Length
20-foot	150-foot	20’	244,700’	28,000’
18-foot	125-foot	18’	244,700’	21,000’
20-foot	125-foot	20’	244,700’	28,000’
18-foot	135-foot	18’	244,700’	21,000’
20-foot	135-foot	20’	244,700’	28,000’
16-foot	150-foot	16’	244,700’	21,000’
18-foot	150-foot	18’	244,700’	21,000’

[1] *Channel depths in feet NAVD88. These seven were screened to three channel sizes - 16’ x 150’, 18’ x 150’ and 20’ x 150’ with lengths of 60 miles for all three channel sizes.*

An incremental analysis was conducted on alternative channel depths. The selection of the channel depths is based on the size of the deepwater fabrication topsides that POI is projected to win. The weight of the topside itself is the fabrication weight. However, topside weights on a systematic basis are available only in terms of installed topsides. Installed topside weights (load-out weights) reflect the weights of topsides as they leave the fabrication yards because they include additional components such as heliports and living quarters. As opposed to installed weight, fabricator weight does not include these additional components. In this analysis, the topside fabricator contract weights were assumed to be an average of 6,000, 8,000 and 10,000 tons for SPAR, FPSO and FPS, respectively. The corresponding installed weights were assumed to be 9,000, 12,000 and 15,000 tons. The associated channel depth required to safely move topsides with installed weights of 9,000, 12,000 and 15,000 tons were identified to be 16, 18 and 20-feet respectively. This information was obtained through industry sources. As mentioned previously, channel depths greater than 20-feet were not analyzed because the local sponsor of this project has restricted their participation to channel depths of 20-feet or less.

Additional efforts were made to establish the weight-draft relationship. A separate industry source provided the information contained in **table MR 4-3**. **Table MR 4-3**

shows a generalized relationship between the weight of topsides and the total draft of the barge used to move the structure to its final destination. Also shown is the channel depth required to accommodate a given weight class. Topsides weights are arranged in size "categories". The industry preferred barge used to move structures weighting in excess of 5,000 tons from port to locations in the deep waters of the Gulf is 400-feet long, 100-feet wide and from the deck to the bottom of the hull measures 25-feet. Barges of this type have a maximum draft of about 21-feet. This barge is incorporated into the analysis of **table MR 4-3**.

Total draft requirement was computed by adding barge empty draft ("barge draft" in **table MR 4-3**) and a trim and ballast estimate to the topside draft. Trim and ballast requirement is an additional emersion requirement for stability and safety reasons. The greater the emersion the lower the barge rides in the water, the more stable it will be. **Table MR 4-3** shows that when the load exceeds 12,000 tons the ballast requirements decline. This is due to the fact that ballast weight is replaced by the weight of the load. One additional consideration, underway underkeel clearance, is necessary to determine the required channel depth for each weight class. One foot is generally used as the minimum requirement.

In another attempt to define the weight-draft relationship, **table MR 4-4** was generated. **Table MR 4-4** assumes the same barge draft, ballast and underkeel in **table MR 4-3**. The immersion due to topside weight was estimated using the Barge Displacement Calculator published by McDonough Marine (See **Figure 16** in **Appendix A**). Immersion, expressed as short tons per foot assuming the industry-preferred barge (400 ft x 100 ft), was determined to be 1,250 tons per foot using the Barge Displacement Calculator. This corresponds to the immersion factors provided by the second referenced industry source (**table MR 4-3**).

It must be emphasized that the loading relationships described in **table MR 4-3** and **table MR 4-4** are generalized approximations. The variability in physical configuration for topsides of a given weight class along with variability in operations that exist at the time of transit make specifications of a precise load to draft relationship impossible. The oil/gas industry interviews suggest that there is limited utility in attempting to generalize among topsides based on size and weight statistics and statistically linking this small sample to reported barge drafts and channel depths. The topsides are viewed as customized pieces of equipment that display considerable variation of weight within each grouping. Moreover, attempts to link topsides "size" to sailing draft requirements were very difficult because of industry preferences for ballasting. The industry interviews suggest that the maximum sailing draft of the barge is preferred for a reduced center of gravity.

However, it is necessary to assume some generalized relationship to facilitate the assignment of specific weight classes to channel depths. The subsequent analysis assumes the initially described relationship i.e. topsides weights of 9,000, 12,000, and 15,000 tons correspond to channel depth requirements of 16, 18 and 20-feet.

Table MR 4-3
Weight-Draft Relationship

Topside Installed Weight Category	Topside Tons Divided by Tons Per Foot	Topside Draft(ft)	Barge Draft(ft)	Trim Ballast(ft)	Total Draft(ft)	Channel Depth Range(ft)*
5,000 to 6,000	5,000-6,000/1,250	4-5	4	2-3	10-12	11-13
10,000 to 12,000	10,000-12,000/1,250	8-10	4	3-4	15-18	16-19
13,000 to 15,000	13,000-15,000/1,250	10-12	4	2-3	16-19	17-20
16,000 to 18,000	16,000-18,000/1,250	13-14	4	0-1	17-19	18-20

Source: Based on industry provided data

* Assuming a 1 foot under-keel clearance

Table MR 4-4
Load-Out Weight-Draft Relationship

Load-Out Weight (tons)	Topside Draft (ft)	Barge Draft (ft)	Ballast (ft)	Under-Keel Clearance (ft)	Channel Depth (ft)
9,000	7.2	4	3	1	15.2
12,000	9.6	4	3	1	17.6
15,000	12	4	3	1	20

Note: Topside Draft estimate from Barge Displacement Calculator. 1,250 tons/ft.

Ballast estimates based on industry provided data.

Total construction cost is estimated to be $203 million for the 20-foot channel, $179 million for the 18-foot channel, and $156 million for the 16-foot channel, which would be spent over a 5-year period beginning in year 2007.

The existing FWB channel and the portion of the GIWW evaluated in this study have not been dredged since the early 1980s; therefore, there is no current dredging volume or associated costs. The FWB Bar Channel would require removal of a significant amount of dredged material every three years as shown in the following section. In evaluating various channel dimensions, it was assumed that in all cases the GIWW and FWB channel bank lines would be stabilized to +3.5-feet NAVD88 and +5-feet NAVD88, respectively, with rock armoring that would settle to +1.4-feet NAVD88 (which corresponds to the adjacent marsh elevation) within 5 years.

4.3.2 Dredge Material Disposal Plan Analysis

Four disposal plans were investigated for the FWB Alignment. Approximately 36 disposal sites were considered in the formulation of potential disposal plans, including a variety of wetland, marsh, open water, and upland disposal sites as well as placing material adjacent to the channel.

4.3.2.1 Disposal Method 1

- Disposal of dredged material in eroded bank line areas along GIWW and FWB with rock fronting protection of 28-inch and 36-inch stone placed to maintain material. Dredging would be accomplished by the use of bucket dredging.

- Create marshland open water areas of Weeks Bay and Vermilion Bay and marshland nourishment in areas west of FWB.

- Placement of material within intertidal zones along the gulf shoreline.

- Upland disposal along the western side of Commercial Canal for material removed from the upper reach of this channel and the port area with associated dredge material disposal costs.

4.3.2.2 Disposal Method 2

- Use existing disposal easements along the banks of Commercial Canal, GIWW, and FWB Interior. Earthen dikes would be used to contain the dredged material within the disposal areas. Dredging would be accomplished by the use of hydraulic dredges.

- This alternative would not include the following:

  - Stone required for stability and protection of material in-place on eroded banks of the GIWW and FWB
  - Rock dikes for other open water and marsh disposal sites in the project area
  - Geotextile fabric
  - Use of bucket dredging
  - Flotation channel access along GIWW

- Sufficient existing easement acreage is available for the total amount of material from the channels.

4.3.2.3 Disposal Method 3

- Dispose of material in eroded bank line areas along GIWW and FWB, but without placement of 28-inch and 36-inch stone for material retention.

- Proposed disposal procedures for material from Commercial Canal and FWB Bar and Bypass Channels are identical for the project plan utilizing both Method 1 and Method 3. For the GIWW and FWB Interior, the initial dredging plans are also identical: using bucket dredges and placing the dredged material along the eroded shelves of these

channels (relatively flat areas of channel bank located a few feet below the water line). These shelves were created by wave action eroding the weak soils composing the bank and enlarging the top width of the channel. Disposal is proposed for some open water and marsh areas.

- Placing dredged material along the GIWW and FWB shelves would provide readily erodible soils to refill the newly dredged channels. About 30 percent of this unconsolidated material would be lost within the first year after project construction to the erosive forces of wave action from vessel traffic, and it is assumed that all of this material would be redeposited into the channel. If this method were adopted as part of the project, these channel reaches would require maintenance dredging at Year 1 of project life, and then at 5-years intervals. However, the material, which erodes back into the channel, could not be placed back on the shelves because it has a low strength, and after washing back into the channel through wave action, it would have almost no strength. Hydraulic dredging would then be required to remove it from the channel, and upland confined disposal areas would be needed.

4.3.2.4 Disposal Method 4

- Dredging would be accomplished by bucket dredges. Three contracts would be needed for Commercial Canal and the GIWW. Five contracts would be needed for FWB interior. Approximately 12,363,000 cubic yards of material would be removed from the channels.

- Material from the Commercial Canal, the GIWW, and the FWB Interior would be placed on barges and transported through the FWB lock to a deepwater Ocean Dredge Material Disposal Site (ODMDS). No such approved site currently exists; thus, a lengthy process to identify and obtain approval from the USEPA for a new ODMDS would be required prior to dredging activities beginning. It is estimated this process could take up to three years and coast $1 million.

- The cost of initial construction for the project utilizing this method would be approximately $211.4 million. The corresponding cost of the project with the preferred disposal method (Method 1) would be approximately $203 million. Thus, the preferred disposal method would be $8.4 million less than Method 4.

- The annual average OMRR&R cost for the project utilizing Method 4 would be approximately $4.8 million. The corresponding OMRR&R cost for the project with the preferred disposal method (Method 1) would be $2.6 million. Thus, the average annual OMRR&R cost for the preferred method would be approximately $2.2 million more that Method 4.

- This option is environmentally unacceptable and not in compliance with the objectives of the Louisiana State Coastal Zone Management (CZM); thus, it is not included in the FEIS.

The quantities of dredged material during the initial construction are displayed in **table MR 4-5**.

Table MR 4-5
Initial Construction Dredging Quantities *(in cubic yards, Cy)*

Channel Dimensions	Reach	Dredging Qnty (Cy)	FWB Bypass Qnty (Cy)
(-)18' x125'	Commercial Canal	1,623,000	0
	GIWW	2,037,000	0
	FWB Interior	2,980,000	0
	FWB Bar Channel	1,520,994	361,000
(-)20' x 125'	Commercial Canal	2,105,000	0
	GIWW	3,175,000	0
	FWB nterior	4,208,000	0
	FWB Bar Channel	2,284,109	466,000
(-)18' x 135'	Commercial Canal	1,755,000	0
	GIWW	2,250,000	0
	FWB Interior	3,318,000	0
	FWB Bar Channel	1,538,905	391,000
(-)20' x 135'	Commercial Canal	2,283,000	0
	GIWW	5,145,020	0
	FWB Interior	4,627,000	0
	FWB Bar Channel	2,307,506	502,000
(-)16' x 150'	Commercial Canal	1,477,000	0
	GIWW	1,578,000	0
	FWB Interior	2,541,000	0
	FWB Bar Channel	906,685	325,000
(-)18' x 150'	Commercial Canal	1,997,000	0
	GIWW	2,614,000	0
	FWB Interior	3,487,000	0
	FWB Bar Channel	1,567,020	438,000
(-)20' x 150'	Commercial Canal	2,594,000	0
	GIWW	4,169,000	0
	FWB Interior	5,600,000	0
	FWB Bar Channel	2,343,760	557,000

4.3.3 Removals

For the purpose of this study, all pipeline relocations are non-compensable and thus are removals. The proposed removals required for this project are required for all dimensions of the FWB Alignment. Categories of facilities affected by the project include oil and gas pipelines, and electrical lines. The locations of impacted facilities were obtained from site visits, state agencies, and facility representatives. For the purpose of this study, state plane coordinates, NAD 83, Louisiana south zone, reference the impacted facilities.

The FWB, GIWW, Commercial Canal, and the POI, are proposed to be dredged to an elevation of -23.0-feet NAVD88. The CEMVN criteria requires a minimum of 8-feet of mud cover over a pipeline in a Federally maintained navigable waterway as measured from the bottom of the channel to the top of the pipeline. Therefore, any pipeline or buried utility line with a top of pipe elevation greater than elevation -30-feet NAVD88 would require removal.

Impacted facilities requiring removal would be removed to facilitate the new design depth and channel cross section. To maintain continuous service for facilities during removal operations, hot taps and temporary bypasses are assumed, as well as de-energizing submerged electrical cables. The construction of this project may require the removal of approximately 31 pipelines, 2 submarine power lines, and a sewer lift station.

4.3.4 Maintenance

The majority of maintenance is expected to be in the Commercial Canal and FWB Bar Channel reaches. Limited maintenance along both the GIWW and FWB is expected due to the placement of rock for bank protection along both of these reaches.

4.3.4.1 Commercial Canal

In general, maintenance quantities are expected to be greater in the first 10-years, followed by diminishing requirements through the remaining project life. As with dredging and disposal of the initial construction material, maintenance dredging material would be disposed of in the upland confined disposal area along the west bank of Commercial Canal. The first maintenance dredging cycle is expected to be completed, approximately 5-years after initial construction, followed by maintenance cycles in year 10, year 20, year 35, and year 50 at a total cost of $13 million. The existing Commercial Canal channel is maintained by the POI.

4.3.4.2 FWB Bar Channel

The FWB Bar Channel is currently being dredged every 4 years at a total cost of $47.4 million. Maintenance dredging of the FWB Bar Channel is projected to be one cycle every 3 years, at a total cost of $99.1 million. Maintenance quantities are expected to

increase consistent with channel dimensions as well. Additionally, hurricanes and tropical storms would have an effect on the channel maintenance quantities.

4.3.4.3 GIWW

Currently, no maintenance dredging is performed along the GIWW reach of the project. The channel was initially constructed to -12 foot M.L.G. by 125 foot bottom width, and current surveys indicate the channel is deeper and wider than these original construction dimensions. Maintenance dredging projections indicate minimal maintenance dredging would be required along the channel at the new dimensions as well. This projection is because the banks are protected with rock or other similar erosion protection.

Quantity estimates for maintenance dredging indicate that some material placed in the eroded bank lines along the channel would once again erode into the channel. The erosion of this material is expected to deposit 1.0 to 1.2-feet of material along the channel bottom, varying according to which channel dimensions are being analyzed. Additionally, hurricanes making landfall within the project area will deposit material within the channel. Therefore, maintenance dredging has been included for the GIWW reach of the project. The first maintenance dredging cycle is expected approximately 10-years after initial construction, followed by maintenance cycles in years 25 and 40 at a total cost of $25 million. Maintenance dredging material would be disposed of in the open water disposal areas in Vermilion Bay.

4.3.4.4 FWB

Similar to the GIWW reach of the project, no maintenance dredging is currently performed in FWB. The channel was initially constructed to -12-feet MLG by 125-feet bottom width and current surveys indicate the channel is deeper and wider than these original construction dimensions. Maintenance dredging projections indicate minimal maintenance dredging would be required along the channel at the new dimensions as well. This projection is based on the assumption that the banks would be protected with rock or other similar erosion protection.

As with the GIWW, quantity estimates for maintenance dredging indicate that some material placed in the eroded bank lines along the channel would once again erode into the channel. The erosion of this material is expected to deposit 1 to 1.2-feet of material along the channel bottom, varying according to which channel dimensions are being analyzed. Additionally, hurricanes making landfall within the project area would deposit material within the channel. The first maintenance dredging cycle is expected approximately 10-years after initial construction, followed by maintenance cycles in years 25 and 40 at a total cost of $27 million. Maintenance dredging material would be disposed of in the open water disposal areas associated with Vermilion Bay to create marsh.

4.3.5 FWB Bypass Channel Floodgate

In order to accommodate the passage of oversized vessels, a 125-foot wide by 12 foot deep bypass channel was constructed in 1986, around FWB lock. The existing bypass channel is sealed from FWB at both ends by concrete structures utilizing concrete blocking pins on both ends. The bypass channel contains two removable concrete barge structures that are sunk at each end to prevent saltwater intrusion when not in use. The concrete blocks require lifting by a barge mounted crane to move the concrete barge structures and a significant amount of dredging is required to allow access for the bypass channel. The proposed deepening of the FWB bypass channel would render these existing closure structures unusable in their current configuration. As a result, major construction of a new closure system would be required. For the purpose of this study, the following systems were investigated:

Option 1: One Cast-In-Place Concrete Floodgate with Steel Sector Gates
Option 2: Two Concrete-Barge Floodgates with Concrete Receiving Structures
Option 3: Two Steel-Barge Floodgates with Concrete Receiving Structures

Detailed cost estimates for each structure are provided in the Engineering Appendix (**Appendix C 1**). Option 1 proved to be the most expensive alternative. Additionally, the single gate alternative raised concerns about a significant amount of salt water intruding into FWB. Option 3 was not selected due to corrosion concerns over all steel barge structures. Consequently, Option 2 was selected based on the least cost over the project life.

4.3.6 Bulkhead Design, Soil Bearing Capacity and Load-Out Capabilities

Construction activities in the POI would result in the removal of several private and public bulkhead structures. The existing design conditions for most of the bulkheads were not known; therefore, it was assumed that most of the bulkheads would be replaced in lieu of modification. As-built drawings were provided by some of the businesses; however, for the purpose of this study, it was assumed those bulkheads would also be replaced. The surcharge loading used for preliminary analysis was 200 lbs per square foot. The owner would be required to design for larger loads, as explained in detail in **Appendix C 1**.

Issues relevant to construction and load-out of large modules (7,000 to 9,000 tons) include in-situ soil bearing capacity and load-out capabilities. Discussions with the large fabricators in the Port of Iberia, namely Dynamic, Omega and Unifab, were held to determine their methods to load-out heavy structures; in addition, discussions with Mammoet USA, a local/international load-out firm for overland transport and loading issues, were also held.

The discussion mentioned in the previous paragraph revealed that every large job that would be built at these fabrication yards would require some yard improvements that would be specific to the size, shape and weight dimensions of the topside.

Approximately $100,000 to $200,000 is spent at the beginning of these jobs, which is included in the price of the bid.

Both Omega and Dynamic have indicated that they have reinforced their yards to increase the bearing capacity to near 10,000 pounds per square foot (psf). Omega was consulted on recent upgrades (2003) to their facilities and their design was set-up for a 10,000-ton load-out capacity. Mammoet USA was also consulted because they have done heavy load-outs for all three major fabricators at the Port of Iberia and for other major fabricators in Morgan City, Baton Rouge and Texas. Mammoet's experience is that the Omega and Dynamic yards are reinforced with limestone that provides sufficient strength for their multi-axle loading systems, and that both yards could handle the loads projected for 7,000 to 9,000 ton topsides. Unifab has already completed the engineering required to handle loads associated with an 8,000 ton, 8-leg load module. Their yard improvement plan consists of placing pile-supported pads in the load-out area behind the bulkhead. Each pad is designed to distribute 550 tons. A 15,000-ton module would involve additional pads and/or a redesign of the pile grouping to hold the additional weight up to 750 tons per set. The yard improvement plan includes a limestone pad over a geogrid reinforcing membrane. Similar limestone pads capable of 10,000 psf yard loading have already been constructed at Dynamic and Omega. As previously mentioned, yard improvement costs would be part of the specific topside project cost and not the cost to the Port of Iberia projects.

The POI fabricators also state that if more than one of these large topsides would have to be built at the same time, then the yards would have to be reinforced. This could cost in the neighborhood of $250,000 to $500,000. The difference between the standard yard improvement costs and the reinforcement costs would probably be borne by the fabricator in his capital expenditure budget and spread out over a multi year plan.

Mammoet USA indicates that load-out for a 10,000-ton module could be accomplished utilizing a wheeled-loading system that distributes the weight using multiple axels each capable up supporting 36 tons. Mammoet added that load-out for a heavier module (15,000 ton range) would be accomplished using a system based upon the traditional skid track system. Multiple skid tracks would be used depending on the number of legs of the module, but for an eight-legged platform, either be 2 or 4 tracks would be utilized, depending on the loading orientation of the module. The module would be loaded standing up with each of its legs in a "shoe." This shoe is fabricated to accept the round tubular leg of the module and rest in the skid track that is a wide-channel beam. The shoe for a large load-out would be approximately 15-feet long. The tracks would span between the pads. The load would be transferred to the pads, and a portion of the load would also be transferred to the ground between the pads using steel mats under the tracks. The shoe will be capable of evenly distributing the load and not be dependent on the tilt of the module. The large fabricators in the Port of Iberia have described their fabrication yards adjacent to the bulkhead as being reinforced with limestone to distribute a 10,000-psf load, which matches with Mammoet's description of the load-out area. The load-out is performed so that the load is not introduced at the bulkhead instead shared between the barge and the load-out pad behind the bulkhead. Costs for load-out

planning, design and implementation would be part of the specific topside project cost and not the cost to the Port of Iberia projects.

4.3.7 Real Estate

The non-Federal sponsor for the construction of this project per Louisiana law is the LADOTD. The LADOTD has entered into a cooperative endeavor agreement with the POI, which is named as the LADOTD's agent. The LADOTD has sufficient authority to acquire, hold, and provide the real estate needed for this project. This includes quick-take authority; all provided the United States agrees to operate and maintain the FWB Bypass Channel, structures and improvements. The LADOTD does not currently own any of the right-of-way required for this project. The Commercial Canal is owned by the POI. Real Estate interests for the canal would be provided to the LADOTD for this project.

The Federal Government has extensive channel and disposal easements within the required right-of-way, and approximately 1,730 acres of these would be used for this project. In addition, the USACE's Navigation Servitude would be utilized in tidal areas to construct in areas below the high water mark and in non-tidal areas to all lands within the bed and banks of the Commercial Canal that lie below the ordinary high water mark. Many project lands required along the GIWW and FWB portions of the project are available through existing rights-of-way owned by the United States for channel deepening and some disposal areas.

4.4 KEY ASSUMPTIONS

4.4.1 Economic Assumptions and Scenario Analysis

4.4.1.1 Future Without-Project Assumptions

A complete analysis of the worldwide petroleum reserves and estimates of future extraction and production of those resources by foreign and domestic companies over a 50-year period is provided in **Appendix A**. According to various studies, both shallow water oil exploration and shallow water floater production are in steady decline. As displayed in **table MR 4-6**, from 1990 – 2001 shallow water oil production has flattened or decreased while deepwater oil production has exploded from 33 million barrels of oil per day in 1990 to 930 million barrels of oil per day in 2001. This trend is expected to continue for the near future. Clearly, the focus for future oil exploration and production has shifted to the deeper waters of the Gulf of Mexico.

Table MR 4-6
Average Annual Oil and Gas Production in the Gulf of Mexico (Deepwater and Shallow Water)

Year	Oil (MBOPD)		Gas (BCFPD)	
	Shallow-water	Deepwater	Shallow-water	Deepwater
1990	719	33	13.4	0.1
1991	745	63	12.7	0.2
1992	733	102	12.5	0.2
1993	745	101	12.4	0.3
1994	746	115	12.8	0.4
1995	794	151	12.6	0.5
1996	813	198	13.2	0.8
1997	830	297	13.1	1.0
1998	781	436	12.3	1.5
1999	741	617	11.5	2.3
2000	690	743	10.8	2.7
2001	620	930	10.7	3.2

Source: Deepwater Gulf of Mexico: America's Expanding Frontier. Minerals Management Service, OCS Report, 2002-021

Capital expenditures for shallow water floaters are predicted to steadily decline from nearly $3 billion in 2005 to approximately $2 billion in 2008 (**figure MR 4-1)**. During this same period, deepwater floater capital expenditure is expected to jump from slightly over $3 billion to more than $6 billion. Thus, although overall spending in oil exploration and production will continue to increase as the world demand for oil grows, the industry is deliberately moving to focus its future resources on deepwater efforts. As production in the shallow water areas of the world decline, fewer contracts will be available for topsides such as those produced at the POI. Competition among the Gulf of Mexico coast fabrication ports will be intense.

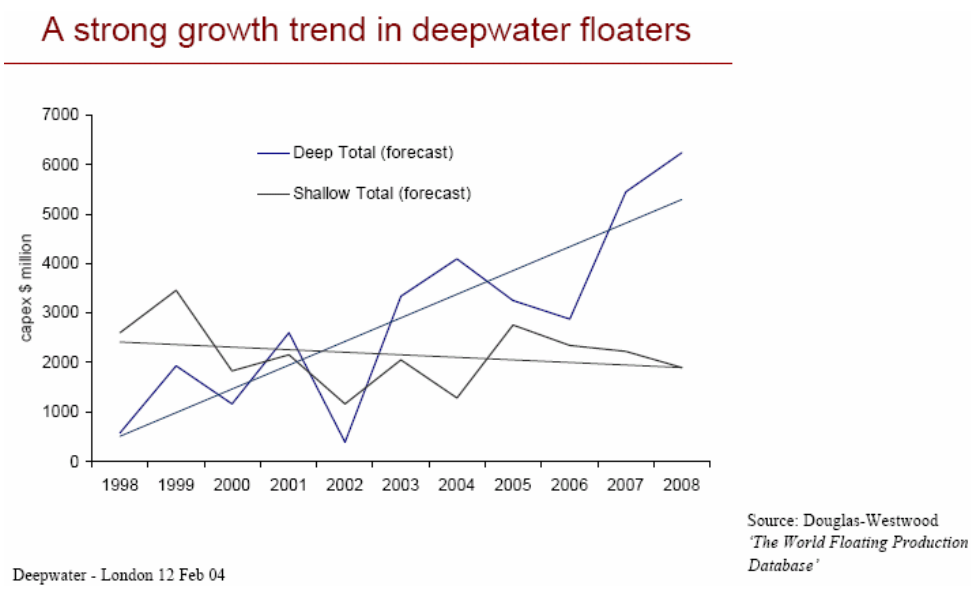

Figure MR 4-1 Strong Growth Trend in Deepwater Floaters

With the recommended plan and No Action Plan, the U.S. would have a 100 percent market share of Gulf of Mexico topsides. In the without project conditions, that U.S. share would be divided among the Big Four/Big Three fabricators that are eligible to bid because of sufficient water depth. The basic assumption for without project conditions is that the POI would not be able to participate as a prime contractor in any of the projected deepwater offshore topsides fabrication projects due to depth restrictions.

Another trend in deepwater oil and gas platforms is to do all integration at the dockside. Mobilization and demobilization expenses for heavy lift derrick barges are expensive and can be complicated by weather conditions. For topsides and hulls, at-sea installation is estimated to be $20 million for equipment mobilization and demobilization. Except for spars, which have to be flooded to be set upright and cannot be integrated at dockside, the trend is to integrate all platforms at dockside. Dockside capabilities at Gulf of Mexico fabricators are limited for handling FPSOs.

4.4.1.2 Future-Project and Scenario Analysis

Given the nature and complexity of the benefit calculations, an unavoidable component of uncertainty is contained in the estimates of project benefits. A single change to any number of assumptions holds the potential for significantly affecting benefit estimates, and ultimately, in turn, economic justification. The size of the GOM topsides market is the starting point for the scenario-specific POI topsides estimates that were evaluated. Since there is uncertainty in estimating the size of the GOM market, we used multiple scenarios representing a range of possible values. Therefore, in addition to the Infield estimate of the GOM market, two estimates based on the MMS low forecast and MMS high forecast are incorporated into the overall analysis. As is the case with the GOM market, there is uncertainty associated with estimating the POI market share. Multiple scenarios representing a range of possible values were evaluated for the POI market share, as detailed in **Appendix A**. Note the POI market share scenarios are sequential and cumulative.

A typical topside fabrication contract is nearly 50 percent labor. The POI offers a labor rate savings of $1.50 per hour; therefore, the POI would be able to offer a cost savings of nearly 3 percent of total labor and 1.5 percent of the total topsides contract (GEC Market Analysis). Work is awarded based on cost, quality, and schedule (ability to meet fixed delivery dates). For cost differentials under 10 percent, it was indicated that the other considerations (quality and schedule) were paramount. It was stated that a topsides contract would not be awarded to the low cost producer based on very small savings (less than 10 percent) unless everything else were equal with respect to quality and schedule. Therefore, it is unlikely that the POI fabricators could win bids based solely on labor cost savings in the presence of the big four with sustained excess capacity. Further, if POI fabricators were able to offer a sustainable competitive cost advantage, the savings would be very small (less than 10 percent of the total contract cost).

Infield Systems (Infield) has provided a long-term worldwide forecast of the number, type, and region of deepwater oil/gas platforms to be installed annually up to 2025 and

thereafter in five-year periods up to year 2050.[1] The U.S. market share issues that need to be determined with respect to the projected world market for deepwater platforms are the U.S. fabricator share of topsides under without project conditions and the Port of Iberia (POI) share of the total U.S. topsides market share under with project conditions. The basic assumption of this analysis is that POI will not be able to participate in any of the projected deepwater offshore topsides fabrication projects as a prime contractor under the without project conditions.

Collectively, three regions Gulf of Mexico (GOM), West Africa (WA), and Latin America (LA) constitute the "golden triangle" of the majority of deepwater offshore reserves and projected activity. Infield forecasts that nearly 80 percent of the total deepwater oil/gas platforms that will be installed between 2010 and 2050 will be in the "golden triangle." Infield projections for the period 2010 to 2050 reflect a nearly equal market share of platforms in the three regions of the "golden triangle." The U.S. and POI market shares of deepwater topsides were developed separately for the U.S. Gulf Of Mexico (GOM). WA and LA regions were excluded because these regions are primarily closed to U.S. fabricators who are effectively prohibited from competing in this market because of local content restrictions.

The U.S. fabricator market share of production of deepwater topsides in the GOM has been nearly 100 percent.[2] Field interviews suggest that this will continue to be the case. Using the GOM as a 100 percent U.S. market share of fabrication of future topsides, the issue is the estimated POI market share of the U.S. under with project conditions. If the POI fabricators are technically eligible to bid under with project conditions, it would appear reasonable to assume that they would share the deepwater topsides market in some relationship to the share of capacity that they would bring to the U.S. market, other things being equal.[3]

For this analysis, it is assumed that POI fabricators will participate in GOM deepwater topsides construction equal to their share of total U.S. fabricator capacity, expressed in annual production hours. This scenario reflects an assumption of sustained excess capacity for topside fabrication. The comparatively small spread of the POI share between average and practical maximum number of annual production hours suggests that 25 percent would be a reasonable estimate of the POI share of total U.S. fabricator hours for forecasted GOM deepwater topsides.

Over the entire 50-year forecast period, it was projected that 57 production platforms would be developed in the Gulf of Mexico using the Infield projection. This equates to 90 platforms using the MMS high projection and 56 platforms using the MMS low projection. The POI's share of the U.S. total market under with project conditions was

[1] The Infield world regions include Australasia, East Asia, Eastern Europe, India, Latin America, Middle East, North Africa, North America, NWECS, South & East Africa, South East Asia, Southern Europe, and West Africa.
[2] With two exceptions, all deepwater topsides have been fabricated by U.S. firms.
[3] The cost structures for the POI fabricators are regarded as similar and competitive with the cost structures of the Big Four (Three) fabricators. "Least total cost" is generally not regarded as an applicable criterion to award fabrication work when there are other considerations among fabricators with similar cost structures.

estimated using an average and maximum number of annual production hours. Then several market scenarios were evaluated for deepwater production in addition to the continuing shallow water topside work already assumed. The scenario analyses were performed as a series of sequential development of market share determinants for the POI fabricators under with project conditions. These scenarios reflect increased (domestic and/or foreign) competition, type of contracts, types of hulls with regard to integration/installation and staging of orders with regard to independents and majors. The POI market share effects are sequential and cumulative. See **Appendix A** for more detailed description and analyses of these scenarios.

For the with project conditions using the Infield GOM projections, the POI is assumed to attract a maximum of 14.25 deepwater topsides (25% market share) and a minimum (assuming the worse case of all scenarios) of 7.33 deepwater topsides (12.9% market share), between 2012 and 2052. Correspondingly, using the MMS high GOM projections results in a higher maximum and minimum and using the MMS low GOM projections result in a slightly lower maximum and minimum.

The contract present values for the forecasted number of platforms projected for the Gulf of Mexico during the period 2012 to 2050 that can be attributed to POI under the market share scenarios is contained in **table MR 4-7**.

Table MR 4-7
POI Topsides Contract Present Values
for Market Scenarios
(5.125 interest rate, millions of dollars)

Scenario	Infield GOM Market		MMS High GOM Market		MMS Low GOM Market	
Competition	No Increased Competition	Increased Competition	No Increased Competition	Increased Competition	No Increased Competition	Increased Competition
16 Foot Channel	$ 258	$ 228	$ 409	$ 361	$ 253	$ 223
18 Foot Channel	$ 283	$ 257	$ 448	$ 407	$ 277	$ 252
20 Foot Channel	$ 352	$ 303	$ 557	$ 480	$ 345	$ 297
20 Percent EPC						
16 Foot Channel	$ 206	$ 182	$ 326	$ 288	$ 202	$ 178
18 Foot Channel	$ 235	$ 205	$ 372	$ 325	$ 230	$ 201
20 Foot Channel	$ 282	$ 242	$ 447	$ 383	$ 276	$ 237
50 Percent Integration						
16 Foot Channel	$ 188	$ 168	$ 298	$ 266	$ 184	$ 165
18 Foot Channel	$ 203	$ 179	$ 321	$ 283	$ 199	$ 175
20 Foot Channel	$ 226	$ 198	$ 358	$ 314	$ 221	$ 194
Staging						
16 Foot Channel	$ 160	$ 143	$ 253	$ 226	$ 157	$ 140
18 Foot Channel	$ 175	$ 154	$ 277	$ 244	$ 171	$ 151
20 Foot Channel	$ 198	$ 173	$ 314	$ 274	$ 194	$ 169

Note: The market share effects are sequential and cumulative rather than independent of each other.

4.4.2 Environmental Assumptions

The following environmental assumptions were considered:

- Avoiding and minimizing damages to existing healthy marsh or wetlands by disposing of any dredged material beneficially.

- The participating Federal and state agencies are concerned with the basic idea of the continued deepening and leveeing of channels, when scientific literature states that the deepening of channels is often responsible for the demise of wetlands in the Louisiana coastal marshes.

- The Vermilion Parish residents have expressed interests and concerns of environmental impacts, such as bank line erosion from wave wash and salinity intrusion.

4.5 SELECTION OF RECOMMENDED PLAN

4.5.1 Cost Analysis

The FWB Alignment addresses the primary planning objective of providing improved navigation access for existing and future deepwater oil and gas production platforms at the POI. The least-cost environmentally acceptable method of enlarging the channels and disposing dredge material was developed. The cost difference of the alternative channel dimensions is shown in **table MR 4-8**.

Table MR 4-8
Total Project Cost for Alternatives

FEATURES	-20'x150'	-18'X150	-16'x150'
Initial Dredging, Commercial Canal	$11,433,760	$9,296,428	$6,818,454
Initial Dredging, GIWW	$34,285,928	$25,042,837	$14,910,698
Initial Dredging, FWB Interior	$69,036,225	$59,849,646	$52,718,829
Initial Dredging, FWB Bar Channel and Bypass	$13,994,267	$10,961,400	$6,993,321
PED Surveys	$300,000	$300,000	$300,000
PED Borings	$350,000	$350,000	$350,000
Bulkhead Replacement (LSF)	$17,000,072	$17,000,072	$17,000,072
Bypass Channel Floodgates	$30,637,232	$30,637,232	$30,637,232
Removals	$24,111,323	$24,111,323	$24,111,323
Real Estate	$1,695,000	$1,695,000	$1,695,000
Mitigation	$0	$0	$0
TOTAL	$202,843,808	$179,243,938	$155,534,929
OMRR&R Costs	$125,204,711	$92,223,012	$81,409,184
Environmental Monitoring & OMRR&R	$5,250,000	$5,250,000	$5,250,000

Note: Planning, Engineering and Design costs and Construction Management costs are shown included in each feature.

4.5.2 Benefit Analysis

The plan that reasonably maximizes net contributions to economic development is designated as the NED Plan. Due to the uncertainty of projections of both the GOM market and the POI market share, a scenario approach was taken to evaluate the project benefits. Consequently, there is no single alternative that maximized net benefits. Given a specific set of conditions described by individual scenarios, the alternative that maximized net benefits varies. **Table MR 4-9** displays the composition of average annual benefits and **table MR 4-10** displays the average annual net benefits (representing the difference between average annual benefits and average annual costs) for each of the channel depths analyzed and for each of the market share scenarios. The estimates, in 2004 prices, were calculated using an interest rate of 5.125 percent, a 50-year project life and a base year of 2012.

Table MR 4-9
Average Annual Benefits
(5.125 interest rate, thousands of dollars)

Scenario	Infield GOM Market		MMS High GOM Market		MMS Low GOM Market	
Competition	No Increased Competition	Increased Competition	No Increased Competition	Increased Competition	No Increased Competition	Increased Competition
16 Foot Channel	14,406	12,731	22,810	20,158	14,106	12,466
18 Foot Channel	15,802	14,350	25,020	22,721	15,473	14,051
20 Foot Channel	19,655	16,919	31,120	26,788	19,246	16,566
20 Percent EPC						
16 Foot Channel	11,503	10,163	18,213	16,091	11,263	9,951
18 Foot Channel	13,122	11,447	20,776	18,124	12,849	11,208
20 Foot Channel	15,746	13,513	24,932	21,395	15,418	13,231
50 Percent Integration						
16 Foot Channel	10,498	9,381	16,621	14,853	10,279	9,185
18 Foot Channel	11,335	9,995	17,947	15,825	11,099	9,787
20 Foot Channel	12,619	11,056	19,981	17,505	12,356	10,826
Staging						
16 Foot Channel	8,934	7,985	14,146	12,643	8,748	7,818
18 Foot Channel	9,772	8,599	15,472	13,615	9,568	8,420
20 Foot Channel	11,056	9,660	17,505	15,295	10,826	9,459

Note: The market share effects are sequential and cumulative rather than independent of each other.

Table MR 4-10
Average Annual Net Benefits
(5.125 interest rate, thousands of dollars)

Scenario	Infield GOM Market		MMS High GOM Market		MMS Low GOM Market	
Competition	No Increased Competition	Increased Competition	No Increased Competition	Increased Competition	No Increased Competition	Increased Competition
16 Foot Channel	3,274	1,599	11,678	9,026	2,974	1,334
18 Foot Channel	2,982	1,530	12,200	9,902	2,653	1,232
20 Foot Channel	4,702	1,965	16,167	11,835	4,292	1,613
20 Percent EPC						
16 Foot Channel	371	(969)	7,081	4,959	131	(1,181)
18 Foot Channel	302	(1,373)	7,957	5,304	29	(1,612)
20 Foot Channel	793	(1,441)	9,978	6,442	465	(1,722)
50 Percent Integration						
16 Foot Channel	(634)	(1,751)	5,489	3,721	(853)	(1,946)
18 Foot Channel	(1,485)	(2,825)	5,127	3,006	(1,721)	(3,033)
20 Foot Channel	(2,334)	(3,898)	5,027	2,552	(2,597)	(4,128)
Staging						
16 Foot Channel	(2,198)	(3,147)	3,014	1,511	(2,384)	(3,313)
18 Foot Channel	(3,048)	(4,221)	2,652	795	(3,252)	(4,400)
20 Foot Channel	(3,898)	(5,293)	2,552	342	(4,128)	(5,495)

Note: The market share effects are sequential and cumulative rather than independent of each other.

4.5.3 Rationale Analysis

Since there is uncertainty in predicting the size of the GOM topsides market, scenarios were used to represent a range of possible values. Three different projections were used to develop a range of benefits for the GOM market - Infield, MMS low and MMS high. There is also uncertainty with estimating the POI market share. Four scenarios were analyzed as a series of sequential development of market share determinants for the POI fabricators. These scenarios were cumulative, so as you move from one scenario to the next, it also contains the negative effects of the scenarios above it. The scenario analysis results in seventy-two combinations of projected outcomes when considering both the GOM market and POI's resulting market share for topsides. Therefore, the analysis below provides a method of selecting a recommended plan by focusing on the mid-point of the various scenarios and using net benefits as the decision criteria.

For the GOM market, the MMS low and Infield forecasts are essentially the same, so they are treated as one data set for this analysis. An average between the two remaining data sets (MMS high and Infield) then provides a mid-point of the forecasts for the GOM market. See **table MR 4-11** for the net benefit results of this mid-point for the GOM market.

For POI market share, a mid-point between the scenario ranges was used. First, the mid-point of the scenarios was computed. This data represents an average between the

highest market share scenario (Competition) and the lowest market share scenario (Staging), the two extreme endpoints for the scenarios. The competition endpoint is the most optimistic case forecast used for the analyzed scenarios for the POI market share, and represents a 25% market share (with no increased competition). The Staging endpoint contains the cumulative negative effects of all the scenarios above it for the POI market share, based on how the scenarios were computed. Therefore, the POI market share reductions due to the 20 percent EPC and 50 percent Integration scenario's are already built-in when using the Staging scenario as an end point. This is the least optimistic case forecast for the analyzed scenarios for the POI market share and represents a 12.9% market share (with increased competition). See **figure MR 4-2** for the net benefit results of this mid-point in the scenarios. Then the mid-point was taken between the No Increased Competition and Increased Competition data points. See **table MR 4-12** for a depiction of the net benefits resulting from determining the mid-point of both the GOM market and the POI market share. In looking at the overall mid-point of the full range of scenarios, the results demonstrate that the 20-foot channel maximizes net benefits. The resulting net benefits for the 20-foot channel are $3,547,000 and the resulting benefit to cost ratio is 1.2.

Table MR 4-11
Average Annual Net Benefits
AVERAGE OF INFIELD & MMS HIGH GOM MARKET
(5.125 interest rate, thousands of dollars)

Scenario		
Competition	No Increased Competition	Increased Competition
16 Foot Channel	7,476	5,313
18 Foot Channel	7,591	5,716
20 Foot Channel	10,435	6,900
20 Percent EPC		
16 Foot Channel	3,726	1,995
18 Foot Channel	4,130	1,966
20 Foot Channel	5,386	2,500
50 Percent Integration		
16 Foot Channel	2,428	985
18 Foot Channel	1,821	91
20 Foot Channel	1,347	(673)
Staging		
16 Foot Channel	408	(818)
18 Foot Channel	(198)	(1,713)
20 Foot Channel	(673)	(2,476)

Note: The market share effects are sequential and cumulative rather than independent of each other.

Figure MR 4-2
Average Annual Net Benefits
AVERAGE OF HIGHEST & LOWEST POI MARKET SHARE SCENARIO
(COMPETITION-STAGING)
With Average Infield & MMS High GOM Market
(5.125 Interest Rate, Thousands of Dollars)

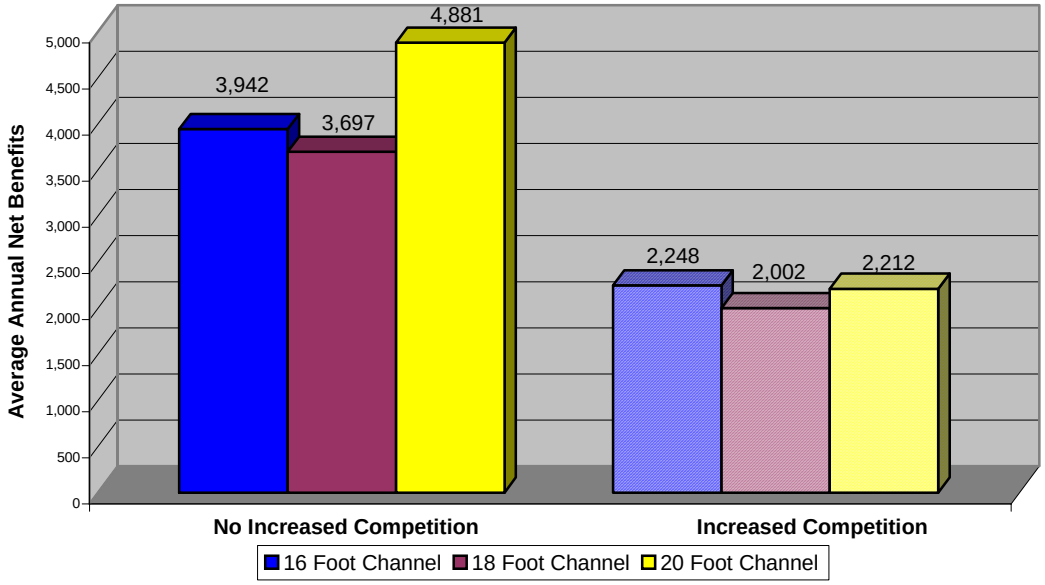

Table MR 4-12
Average Annual Net Benefits

AVERAGE OF NO INCREASED & INCREASED COMPETITION SCENARIO
With Average of Infield & MMS High GOM Market
(5.125 interest rate, thousands of dollars)

Scenario **Competition-Staging**	Mid-Point of No Increased & Increased Competition
16 Foot Channel	3,095
18 Foot Channel	2,850
20 Foot Channel	3,547

To further reinforce the selection of the 20-foot channel as the recommended plan, recent additional information suggests that the upper end of the forecast for the GOM market could be higher than depicted in the range of data used for this analysis. The MMS forecast were based on a price of crude oil of $18 per barrel (low) and $30 per barrel (high). However, as of March 13, 2006, the price for April delivery of sweet crude on the

New York Mercantile Exchange was $60.75 per barrel. That is more than twice the price used in MMS high forecasts.

Additionally, the Department of Energy issued a series of optimistic reports on Friday, March 10, 2006, about the potential for carbon-dioxide-based enhanced oil recovery methods (CO2-EOR) to lead to huge increases in U.S. crude oil production. One of these reports, "Undeveloped Domestic Oil Resources, The Foundation for Increasing Oil Production and a Viable Domestic Oil Industry, prepared for the U.S. Department of Energy by Advanced Resources International in February 2006, states, "Large volumes of technically recoverable domestic oil resources remain undeveloped and are yet to be discovered, estimated at 400 billion barrels, from an undeveloped remaining oil in-place of over a trillion (1,124 billion) barrels. This large undeveloped oil resource base offers promise that a renaissance is possible for the domestic oil industry, greatly improving the nations trade balance and energy security." This report further states that if one assumes that at $40 per barrel for oil, 200 billion barrels (1/2) of this recoverable reserve becomes economic, the ultimate trade balance would be improved by $8 trillion, state and local treasuries would gain $700 billion in revenues, and the decline in domestic oil production would be reversed.

The current and expected future prices of crude oil and the CO2-EOR technologies described above provide additional evidence that the MMS high forecast is probably very conservative and therefore provides the most realistic projections of the three forecasts analyzed.

This information would suggest utilizing the MMS high GOM market forecast, as opposed to using an average between the MMS high and Infield forecasts. Therefore, the same method for computing the mid-point of the various scenarios was utilized using the MMS high GOM market forecast. See **figure MR 4-3** for the net benefit results of the mid-point in the scenarios using the MMS high market forecast. **Table MR 4-13** depicts the net benefit results of the mid-point taken between the No Increased Competition and Increased Competition data points. This table demonstrates the net benefits resulting from determining the mid-point of the POI market share when using the MMS high GOM market. Therefore, in looking at the mid-point of the full range of scenarios using the MMS high GOM market, the results also demonstrate that the 20-foot channel maximizes net benefits. The resulting net benefits for the 20-foot channel are $7,724,000 and the resulting benefit to cost ratio is 1.5.

Figure MR 4-3
Average Annual Net Benefits
AVERAGE OF HIGHEST & LOWEST POI MARKET SHARE SCENARIO
(COMPETITION-STAGING)
With MMS High GOM Market
(5.125 Interest Rate, Thousands of Dollars)

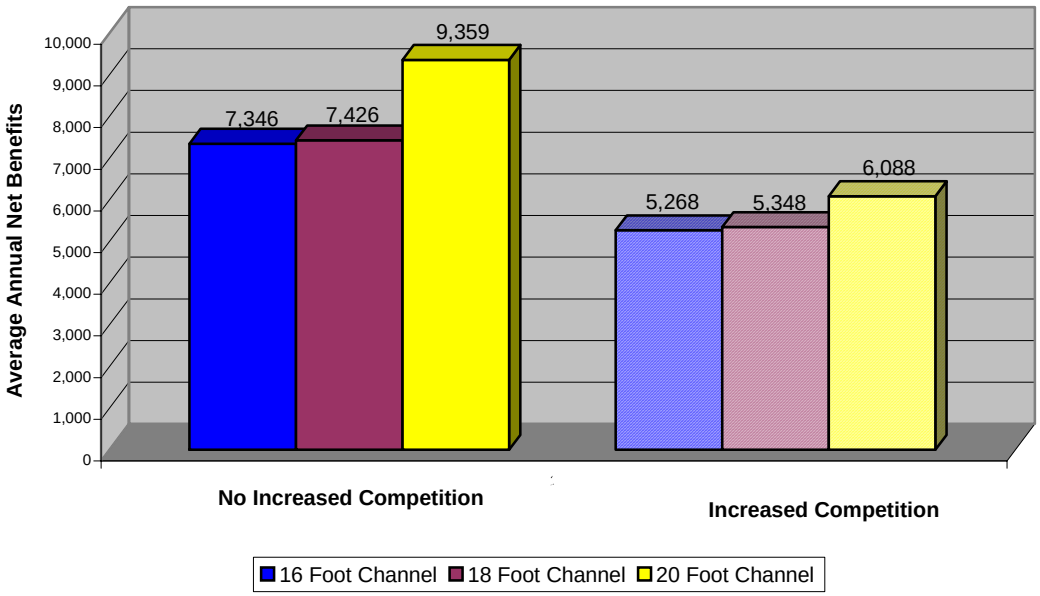

Table MR 4-13
Average Annual Net Benefits
AVERAGE OF NO INCREASED & INCREASED COMPETITION SCENARIO
WITH MMS HIGH GOM MARKET
(5.125 interest rate, thousands of dollars)

Scenario **Competition-Staging**	Mid-Point of No Increased & Increased Competition
16 Foot Channel	6,307
18 Foot Channel	6,387
20 Foot Channel	7,724

4.5.4 Recommended Plan

The FWB Alignment addresses the primary planning objective of providing improved navigation access for existing and future deepwater oil and gas production platforms at the POI. The lengths of the proposed GIWW, FWB and bar channel and Commercial Canal are 20 miles, 18 miles, 7.5 miles, and 7.5 miles respectively, with an additional 7 miles through the Port of Iberia itself. The least-cost environmentally acceptable method of enlarging the channels to 20-feet deep and 150-feet wide, while disposing of dredge material, was developed. Dredged material would be used to reestablish the bank line, create marsh, and nourish the shoreline resulting in net positive environmental impacts.

The true NED plan might exceed the 20-foot depth; however, this study is limited to the 20-foot alternative. The LPP identified for this feasibility report is the 150-foot wide by 20-foot deep alternative. The first cost to construct the project, is estimated to be $203,000,000, which includes dredging costs, rock dike construction costs, swing barge installation costs, real estate acquisition costs, and pipeline relocation costs. The OMRR&R for the recommended plan is estimated at $3,699,000, with the OMRR&R on the existing channel estimated at $1,068,000, resulting in the net annual average cost of OMRR&R at $2,631,000.

Due to the scenario approach, there are various net benefits and Benefit to Cost Ratios (BCR), depending on each particular scenario. Using the MMS high GOM forecast and the mid-point of the various scenarios, the recommended plan identified for this feasibility report is the 20-foot deep by 150-foot wide alternative. The recommended 20-foot channel has net benefits of $7,724,000 and a BCR of 1.5. **Table MR 4-14** displays the composition of total average annual costs and average annual benefits for the 20-foot channel depth.

Table MR 4-14
Average Annual Benefits and Costs
(2004, $1,000, 5.125 Percent)

COSTS	
Annual Construction Cost	$12,332
Annual OMRR&R Cost	$3,699
Total Annual Cost	**$16,021**
BENEFITS	
Deepwater Fabrication Benefits	22,678
OMRR&R Cost Savings	$ 1,068
Total Annual Benefits	$23,746
Net Benefits	$7,724
BCR	1.5
Base Year	2012

None of the channel dimensions would require additional channel rights-of-way. All excavation would occur in open water. Construction of the recommended plan would result in short-term effects including increases in turbidity, sedimentation, temperature, and oxygen demand. It would also result in decreased oxygen and contamination from construction equipment during dredging operations. These effects are considered to be temporary and cease with the end of the construction period. Long-term effects include a healthier, deeper channel as well as new marshland areas created from dredged material. Recreation activities would have a long-term beneficial effect due to the creation of wetlands in open water, which would increase fish and wildlife habitat.

4.6 COMPARATIVE IMPACTS OF NO ACTION PLAN AND RECOMMENDED PLAN TO SIGNIFICANT RESOURCES

This section describes the impacts of the No Action Plan and the recommended plan to the significant resources in the study area. A more detailed explanation of these impacts is contained in chapter 4 of the FEIS.

4.6.1 Marsh

Effects to habitats in the project area were quantified using Wetland Value Assessment models (WVAs) (see **Appendix B**). A comparison of impacts by habitat type is contained in **table MR 4-15**.

Table MR 4-15
Impact Comparisons by Habitat Type

Habitat Types	Existing Conditions		No Action *TY - 50		Recommended Plan *TY - 50	
	Acres	HUs	Acres	AAHUs	Acres	AAHUs
Fresh Marsh	46	69.51	46	173.78	131	281.81
Intermediate Marsh	1247	1310.28	74	2450.8	2618	6578.09
Brackish Marsh	301	269.23	0	497.74	445	976.2
Marsh converted to upland	501	279.62	501	274.99	501	85.93
Shallow Open Water	239	541.34	383	1793.44	1324	3197.55
Other	2685	0#	4015	0#	0	0#
Total	5019	2470	5019	5191	5019	11120

** TY=Target year;*
 # WVA does not assign value to channel bottom and deepwater bay habitat

4.6.1.1 No Action Plan

Marshes of the study area would likely remain relatively stable in comparison to eastern portions of the Louisiana coastline. However, isolated areas of marsh degradation would continue to occur, due to natural and human-induced causes. Erosion along shorelines of the major canals and bays would cause continued loss of the perimeters of adjacent marshes. Some erosion of the gulf shoreline would continue to cause loss of marsh landward of the shoreline. In addition, some amounts of inshore marshes would be

eroded by windblown waves. This loss of marsh would eventually have adverse impacts on fish and wildlife species of the study area.

It is predicted that the POI would continue to dredge the Commercial Canal and the port area in the absence of Federal action. Federal maintenance of the GIWW and FWB would continue, when required, to the current dimensions of -12-feet MLG by 125-feet for the inshore channel reaches and -12-feet MLG by 250-feet in the offshore reach. The lock and bypass structures located on the southern end of FWB would continue to be operated as authorized. The POI's current Section 404 and Coastal Zone Use Permits (WC-19-990-2265) require that dredge material be placed in designated disposal areas in Weeks Bay and several oil and gas canals along the Commercial Canal.

4.6.1.2 Recommended Plan

Based on preliminary structure designs, use of the WVA methodology revealed that the project would have net positive impacts on intermediate and brackish marsh. The proposed project would have a net negative impact on fresh marsh.

Minor adverse environmental impacts would occur to non-motile aquatic species in the areas of dredging and disposal from increased turbidity and entrapment in dredge material. Temporary impacts to terrestrial wildlife habitat occurring on the upland disposal site could be expected.

4.6.2 Essential Fish Habitat

4.6.2.1 No Action Plan

Shoreline erosion and some subsidence would continue to contribute to the loss of wetlands in the project area. Such loss could result in the fragmentation of wetlands along the GIWW and FWB and begin replacing estuarine emergent marsh with open water, mud, and shell bottom substrate. In the long-term, there could be a minor impact to EFH as the marsh-open water interface could begin to degrade in this region of coastal Louisiana. There would be a short-term increase in marsh edge. In the long run, there would be a net decrease in emergent wetlands including marsh and marsh edge.

4.6.2.2 Recommended Plan

Disposal areas resulting from this alternative would provide for protection and creation of existing brackish and intermediate marshes and associated shallow open water areas. For channel stabilization and marsh creation, water bottoms, submerged aquatic vegetation (SAV), and some shell substrate would be filled. The result would be temporal losses of EFH from overfill to allow for settlement and compaction to intertidal marsh elevations within approximately five years of placement. The creation of wetlands would provide EFH for many Federally managed fisheries and associated life stages. In the long-term, the existing and created marsh would continue to provide EFH for many aquatic species.

However, water salinity trends show a freshening of the project area over the 50-year project life with or without the construction of the POI project.

The preliminary finding is that the proposed project may result in primarily temporary and some permanent adverse impacts on some habitats designated as EFH for some life stages of Federally managed fisheries species. However, overall creation and protection of wetland habitats in the project area should satisfy the objective of essential fish habitat pursuant to the Magnuson-Stevens Fishery Conservation and Management Act. The proposed action would have a long-term and overall net environmental benefit, especially to estuarine emergent wetlands.

4.6.3 Estuarine Water Bodies

4.6.3.1 No Action Plan

Productivity of coastal waters located within the project area would likely decline due to the continued loss of coastal wetlands. Shorelines of water bodies would continue to erode into the interior marsh areas, thus creating larger open water areas. Some of this erosion would likely result in the loss of valuable wildlife and fisheries habitat. The CEMVN would likely continue to maintain the GIWW to a depth of 12-feet and a width of 125-feet. No dredge material maintenance has been needed for the inshore reaches of the GIWW and FWB in the past 30 years. The CEMVN would also continue to maintain the offshore reach to the present dimensions and continue to dispose of the material in the Gulf of Mexico within the surf zone.

The POI would likely continue to maintain the Commercial Canal at the present dimensions under the existing permit WC-19-990-2265. The quantity of material presently being dredged within the project area is significantly less than what would be dredged with all of the proposed action alternatives. No impacts on water quality would be expected.

4.6.3.2 Recommended Plan

Increases in salinity and saltwater inundation would convert brackish and intermediate marshes to saline marshes and could cause the conversion of marsh to open water. Deepening and widening existing waterways could also allow high salinity water to enter the inshore wetlands. A 2-dimensional numerical analysis model and existing data was used to determine the effect of deepening the channel on salinity levels in the project area. The analysis indicated that the proposed channel deepening should have little to no influence on salinity levels within the project area. No adverse impacts to water supply interests or to other designated uses, including fishing and wildlife productivity and primary and secondary contact recreation would be experienced.

Dredging in Commercial Canal, GIWW, and FWB could impact the larval stages of estuarine species migrating inshore. The larvae and small juveniles of many species would be temporarily impacted most by turbidity caused by dredging operations. Losses

to bottom-dwelling animals would be temporary. No adverse long-term effects on water quality would be expected.

No oyster leases are located in the areas proposed for dredged material disposal with the exception of Weeks Bay. Weeks Bay has traditionally been listed as public seed grounds, though unproductive, because of the ongoing freshening of the entire Vermilion Bays area. The only oyster leases in close proximity to the project area are located south of Marsh Island and to the west of FWB. The east to west Longshore drift and would likely keep the oyster leases from experiencing any adverse impacts (Penland 1990).

4.6.4 Beaches

4.6.4.1 No Action Plan

The beaches along the west of FWB would continue to experience the marine forces of the Gulf of Mexico. Overwash would occur during storms and supra-tidal events with reworking of beach materials.

4.6.4.2 Recommended Plan

Dredged material from the entrance channel extending approximately 3 to 5 miles to the 20 foot contour would be used for beach nourishment along the western flanking shore of FWB. Dredged material disposal in shallow water along the shoreline would directly and indirectly protect interior saline marshes. These interior saline marshes provide valuable nesting and feeding areas for a large number of avian species.

4.6.5 Gulf Water Bottoms

4.6.5.1 No Action Plan

The gulf water bottom in the navigation channel and immediate vicinity would continue to be periodically affected by maintenance operations. The material dredged from the channel would be of similar grain size and consistency as the material in the disposal areas. Dredge material would continue to be placed adjacent to the gulf beach for shoreline erosion control. Some of the bottom dwelling animals do not have the ability to move and would be lost during dredging operations. Fish and large invertebrates such as crabs and shrimp, would be able to move from the area to adjacent habitats during dredging operations.

4.6.5.2 Recommended Plan

Effects would be limited to the channels and the shoreline area. The width of the offshore reach of FWB, however, is currently authorized and maintained at 250-feet and would not change.

Mobile species of crabs, fish, and shrimp would probably avoid the hydraulic dredging operations, but slow-moving or immobile benthic species would probably be destroyed. Rapid recolonization of dredged water bottoms by benthic invertebrates would be expected and no adverse effects to the aquatic species that occur in these areas would be expected.

4.6.6 Threatened/Endangered Species

4.6.6.1 No Action Plan

No significant change in the status of listed species would be expected. The brown pelican population and would be expected to continue to increase. Rise and fall of populations of other Federally listed species would depend on conditions outside of the study area.

4.6.6.2 Recommended Plan

Initial consultation with NMFS and USFWS resulted in the design of dredging and disposal of material in a manner that would not likely have an adverse impact on listed species. Dredging would be accomplished by using a combination of bucket dredges or cutterhead dredges. Hopper dredges are opposed by NMFS for their effect on endangered turtle species. Hopper dredges addressed in a Gulf Regional Biological Opinion (GRBO) dated 19 November 2003 for the existing project. The GRBO also determined that the use of cutterhead pipeline dredges for maintenance operations was not determined to have significant impacts on sea turtles and/or their critical habitat. A project specific Biological Assessment has been prepared for the species under the purview of USFWS and NMFS (**Appendix B**) to address the additional channel deepening associated with FWB.

4.6.7 Recreation

4.6.7.1 No Action Plan

Consumptive recreation would remain relatively stable, but would ultimately depend on the status of coastal erosion and the health of the marshes and chenieres. The area would continue to function as prime wintering grounds for waterfowl and excellent habitat for white-tailed deer hunting.

Non-consumptive recreation would continue to be provided by a relative abundance of public facilities including state parks, wildlife refuges, and birding trails.

4.6.7.2 Recommended Plan

The recommended plan would not cause permanent negative impacts. Camps along the GIWW would be negatively impacted by the increased turbidity caused from construction. The turbidity would also temporarily impact fishing.

An increase in tonnage and traffic in the Commercial Canal, FWB, and the GIWW would impact the recreational boater and fisherman by causing increased wake action in the main waterways.

4.6.8 Cultural Resources

4.6.8.1 No Action Plan

All known or unknown cultural resources would continue to be exposed to conditions, as they currently exist along channel bank lines and adjacent marsh areas. Impacts from oil and gas exploration, flood control projects, ship channel construction, and wave action caused by vessels navigating the channel would continue to cause erosion and increased saltwater intrusion. The resulting loss of marsh vegetation would increase cultural resource site destruction.

4.6.8.2 Recommended Plan

Natural levee areas currently exposed along the channel bank lines could be subjected to increased erosion from larger vessel wave action and damaged from the initial placement of dredged material in channel disposal areas. Proposed upland disposal area construction and use, which includes berm construction and dredged material placement, could also impact high probability locations.

The CEMVN plans to conduct additional archaeological investigations in all high probability areas delineated and recommended by Lee and others (2004). These investigations will be conducted during the next project phase will include the survey of both terrestrial and submerged project areas that would be directly impacted by proposed construction. Section 106 consultations with the Louisiana State Historic Preservation Office (SHPO) are ongoing and would be concluded prior to initiation of any project construction activities. However, if during construction activities, any unrecorded cultural resources were determined to exist within the proposed project boundaries, no work would proceed in the area containing these cultural resources until a USACE archeologist was notified and final coordination with the SHPO was completed.

4.6.9 Air Quality

4.6.9.1 No Action Plan

The level of business activity at the POI would be affected by the fluctuations of the petroleum industry. However, related emissions would not likely have significant effects on the overall air quality due to the open nature of the study area.

4.6.9.2 Recommended Plan

Construction equipment associated with channel dredging operations includes dredges, tugboats, amphibious vehicles, draglines, small boats, and other related equipment. No

significant effects from the pollutants of construction equipment would be expected to air quality. Increased industrial activity associated with offshore deepwater development would increase the amounts of emissions at the POI; however, no adverse impacts would be expected due to the open nature of the study area.

4.6.10 Hydrology and Water Quality

4.6.10.1 No Action Plan

Projected water quality for the study area would be expected to remain similar to current conditions. Access to the Gulf of Mexico from the POI would remain limited due to 12-foot average water depths through FWB. Traffic in the channel would increase to accommodate the growing offshore industry. Increased traffic could cause increased discharges in the channel.

Factors that currently affect water quality in the study area are municipal, industrial, and agricultural sources; urban runoff; atmospheric sources; and discharge from vessels. These factors would be expected to continue to affect the water quality.

Provided excessive erosion does not occur along the spit separating the opening of FWB from Vermilion Bay, no changes would be expected. Salinities would continue to vary based upon the tidal affect from the Gulf of Mexico and the effects of the freshwater inflow from the Vermilion River and the Mermentau Basin. See **Appendix B** for the complete Water Quality Report.

4.6.10.2 Recommended Plan

The effects of construction due to dredging and disposal areas may include (but are not limited to) typical short-term effects including increased turbidity, sedimentation, temperature, and oxygen demand; decreased oxygen; and contamination from construction equipment and operations. These effects cease with the end of the construction period.

Long-term effects would include a healthier, deeper channel for access from the POI to the Gulf of Mexico, as well new marsh creation areas created from dredged material. In addition, the shoreline on the Gulf of Mexico adjacent to FWB, as well as the designated shoreline in Weeks Bay that would be used for disposal would gain some protection from tidal influence of the Gulf of Mexico.

4.6.11 Socio-Economic Resources

4.6.11.1 Employment

No Action Plan

The future focus on extensive offshore deepwater development and the current inability of numerous ports along the Louisiana coast to meet deep-water access needs would present lost opportunities for construction and service contracts and related employment.

Recommended Plan

Additional rig traffic would be expected to result in a moderate increase in the activities of the local construction and fabrication industries. Thus, a proportionate increase in related employment opportunities may occur.

4.6.11.2 Property Values

No Action Plan

No significant change would be expected in the values of commercial, residential, or agricultural properties.

Recommended Plan

The alternative would allow for an increase in offshore deepwater development business opportunities. Port facilities would improve infrastructure to construct and transport larger products. Property values would appreciate normally.

4.6.11.3 Land Use

No Action Plan

No significant change would be expected.

Recommended Plan

A slight change in land use would be expected. An increase in the demand of existing industrial areas would cause an expansion into the agricultural areas.

4.6.11.4 Farms

No Action Plan

No changes would be expected to agricultural land.

Recommended Plan

Little to no impact would be expected to agricultural land within the immediate vicinity of the POI.

4.6.11.5 Population/Displacement of People

No Action Plan

Slight increases in population of the study area would continue to occur.

Recommended Plan

Slight, temporary increases in population of the study area may occur. Plan would not require the displacement of people or businesses.

4.7 SYSTEMS/WATERSHED CONTEXT

4.7.1 Coordination with the Louisiana Coastal Area Team

The Louisiana Coastal Area (LCA) team was coordinated with throughout the study process. The LCA near-term course of action does not have any restoration features in the immediate vicinity of the project. The goals associated with the LCA Ecosystem Restoration Plan (LCA Plan) are to reverse the current trend of degradation of the coastal ecosystem. The LCA Plan maximizes the use of restoration strategies throughout coastal Louisiana:

- Ecological restoration of healthy, productive, and diverse coastal habitats within critical, high-priority coastal areas
- Enhanced sustainability of critical, high-priority areas within the LCA that have essential for and function of the natural ecosystem
- Integrated restoration program that results in multiple benefits not solely for wetlands, but for communities, industries, and natural resources of the coast

The only foreseeable impact to the LCA from the POI recommended plan would be a positive impact resulting from the disposal of dredge material in the shallow water inter-tidal zone on the west side of FWB. This material would be kept in the littoral drift and deposited up and down the coast, thus mimicking the natural building of the Chenier Plains of coastal Louisiana.

4.8 ENVIRONMENTAL OPERATING PRINCIPLES

The purpose of the USACE Environmental Operating Principles (EOPs) is to illuminate the ways in which the USACE missions must be integrated with natural resource laws, values, and sound environmental practices.

In an effort to incorporate the USACE EOPs into the plan formulation process for the POI study, team members representing various Federal and state resource agencies were

invited to actively participate and take ownership in the navigation study early in the process.

Invoking the EOPs early in the study process supported National Environmental Policy Act (NEPA) compliance and promoted public acceptance toward the feasibility study. Inviting the resource agencies and stakeholders to be actively involved in the decision making process during the entire plan formulation process allowed for early resolution of some of the controversial issues of the project hence making the review process smoother.

Identification of channel alignment and dredge material disposal was accomplished with the help of various agency participants as well as stakeholders to ensure a plan was pursued that would ensure balance and synergy among human development activities and natural systems. The entire dredge material disposal plan was considered precedent setting by the resource agencies and the majority of the public involved in portions of the study process. As a result, the project delivery team recognized the interdependence of life and the physical environment and incorporated this relationship into the study process for the best possible outcome. With involvement from individuals outside of the USACE, the environmental consequences related to deepening existing navigation channels allowed a win-win alternative to be identified early in the study process. Existing data was used to exclude unreasonable alternatives, thus minimizing study time and cost.

The recommended plan meets the majority of the sponsor and stakeholder needs while fully engaging nearly all of the EOPs to culminate in a positive environmental output. The principles are consistent with NEPA, the Army's Environmental Strategy with its four pillars of prevention, compliance, restoration and conservation, and other environmental statutes and WRDA that govern USACE activities.

4.9 INDEPENDENT TECHNICAL REVIEW (ITR)

The Mobile District of the USACE performed ITR of the draft main report, DEIS, and all supporting appendices. A summary of the review comments is provided in **Appendix F.**

CHAPTER 5 EXPECTED PROJECT PERFORMANCE

5.1 PROJECT COSTS

A summary of the implementation costs of the recommended plan is presented in **table MR 5-1**, and a summary of the OMRR&R costs is presented in **table MR 5-2**. The figures presented in the following section have been rounded for reporting convenience. Micro Computer-Aided Cost Engineering Systems (M-CACES) figures are being used for allocating cost.

Table MR 5-1
Summary of Implementation Costs
of the Recommended Plan
(2004 Price Levels)

Construction Cost	$151,780,588
Pre-construction, Engineering & Design	6,198,646
Construction Management	6,720,724
Removals	21,536,506
Bulkheads	14,912,344
Real Estate	1,695,000
Fish and Wildlife Mitigation	0
Total Implementation Costs	$202,843,808
(Rounded)	**$203,000,000**

Table MR 5-2
Summary of OMRR&R Costs of the Recommended Plan
and Avoided Existing OMRR&R Costs (Benefits)
(2004 Price Levels)

Annual OMRR&R Costs	
Annual OMRR&R, 20 X 150-Foot Channel	$ 3,310,000
Annual OMRR&R, Freshwater Bayou Bypass Floodgates	$ 287,000
Annual OMRR&R, Environmental Features and Monitoring	$ 102,000
TOTAL ANNUAL OMRR&R COSTS	**$ 3,699,000**
Avoided (Benefits) Annual OMRR&R Costs	
Avoided Annual OMRR&R, 12 X 125-Foot Channel	$ 948,000
Avoided Annual OMRR&R, Freshwater Bayou Bypass Floodgates	$ 120,000
TOTAL ANNUAL AVOIDED OMRR&R COSTS	**$ 1,068,000**
Net Total OMRR&R Costs for Recommended Plan	***$ 2,631,000***

The implementation costs include deepening and widening of the FWB Bypass Channel, FWB Channel, GIWW, Commercial Canal, and the port area; bypass channel floodgates, removals, bulkhead replacement, rock dike construction, erosion protection; pre-construction engineering and design of the channel; managing the construction contract for the channel and associated features; and acquiring additional real estate interests for the recommended plan.

The operation and maintenance costs of the plan are the total operation and maintenance costs of the channel and associated features, less the costs of the operation and maintenance costs of the existing channel and bypass structure.

5.1.1 Equivalent Annual Costs and Benefits

5.1.1.1 NED Benefits Measured In Accordance With P&G

As discussed previously, the methodology used to measure benefits for this analysis is based on legislative language included in Public Law 109-13, Emergency Supplemental Appropriations Act for Defense, the Global War on Terror, and Tsunami Relief, 2005.

Under the legislation, the full monetary value of any contract awarded to the Port of Iberia for the deepwater fabrication of offshore exploration and production equipment is included in the calculation of benefits. Furthermore, any benefit using Deepwater Fabrication contracts is to be counted as a benefit for project justification regardless if work was displaced from foreign or domestic yards.

This legislation has implications for the POI analysis because under NED benefits measured in accordance with P&G, explained in ER 1100-2-100, the Congressionally mandated benefits using Deepwater Fabrication contracts described in this analysis would represent regional economic benefits (RED) and not NED benefits. This is because the contracts that fabricators from the POI are expected to win, with a deeper channel, would be at the expense of other domestic fabricators. Consequently, even though the POI and surrounding areas would benefit economically from increased activity, from a national perspective there is no net increase in overall economic development.

Table MR 5-3 displays how overall project justification is affected by measuring benefits in accordance with Congressionally mandated language. **Table MR 5-3** displays the composition of total average annual costs and average annual benefits for the 20-foot channel depth and for each of the market share scenarios. The estimates, in 2004 prices, were calculated using an interest rate of 5.125 percent, a 50-year project life and a base year of 2012. Also displayed are the net benefits, representing the difference between average annual benefits and average annual costs, and the resulting benefit to cost ratio (BCR) for the 20-foot channel and for each of the market share scenarios.

Table MR 5-3
Average Annual Benefits and Costs
(2004, $1,000, 5.125 Percent)

Average Annual Costs

Annual Construction	$12,322
Annual OMRR&R	$3,699
Total Annual Costs	$16,021

Note: These 20-foot channel costs are the same for each scenario depicted below.

Average Annual Benefits (Appropriations Directed Benefits)

Scenario	Infield GOM Market		MMS High GOM Market		MMS Low GOM Market	
Competition	No Increased Competition	Increased Competition	No Increased Competition	Increased Competition	No Increased Competition	Increased Competition
Deepwater Fab. Benefits	19,655	16,919	31,120	26,788	19,246	16,566
OMRR&R Cost Savings	1,068	1,068	1,068	1,068	1,068	1,068
Total Annual Benefits	20,723	17,987	32,188	27,856	20,314	17,634
Net Benefits	4,702	1,965	16,167	11,835	4,292	1,613
BCR	1.31	1.13	2.08	1.79	1.29	1.11
20 Percent EPC						
Deepwater Fab. Benefits	15,746	13,513	24,932	21,395	15,418	13,231
OMRR&R Cost Savings	1,068	1,068	1,068	1,068	1,068	1,068
Total Annual Benefits	16,814	14,581	26,000	22,463	16,486	14,299
Net Benefits	793	(1,441)	9,978	6,442	465	(1,722)
BCR	1.05	0.90	1.67	1.43	1.03	0.88
50 Percent Integration						
Deepwater Fab. Benefits	12,619	11,056	19,981	17,505	12,356	10,826
OMRR&R Cost Savings	1,068	1,068	1,068	1,068	1,068	1,068
Total Annual Benefits	13,687	12,124	21,049	18,573	13,424	11,894
Net Benefits	(2,334)	(3,898)	5,027	2,552	(2,597)	(4,128)
BCR	0.84	0.74	1.34	1.17	0.83	0.72
Staging						
Deepwater Fab. Benefits	11,056	9,660	17,505	15,295	10,826	9,459
OMRR&R Cost Savings	1,068	1,068	1,068	1,068	1,068	1,068
Total Annual Benefits	12,124	10,728	18,573	16,363	11,894	10,527
Net Benefits	(3,898)	(5,293)	2,552	342	(4,128)	(5,495)
BCR	0.74	0.65	1.17	1.02	0.72	0.63

Note: 2012 base year used in all calculations in the table. Only scenarios for the 20-foot channel are depicted in the table. The Market Share effects are sequential and cumulative rather than independent of each other.

5.2 COST SHARING

The first costs of the recommended plan are currently estimated to be $202,843,808 (see **tables MR 5-5** and **MR 5-6**). The Federal share during construction would be $148,303,762. The non-Federal sponsor's 10 percent share of general navigation features required during construction would be $16,478,196. In addition, the sponsor would provide LERRD and local service facilities amounting to $1,613,000 and $14,912,344 respectively. For the purpose of this report, all pipeline relocations are non-compensable and thus are removals. The facility owners would be responsible for $21,536,506 for removals. Upon completion of the project, the sponsor would be responsible for a 10 percent payback to the USACE based on total project cost. That amount would be $14,865,196 and can be paid over a period of 30 years. The $1,613,000 for Real Estate would be creditable towards the 10 percent after construction. The responsibility for Real Estate efforts (lands, easements, and rights-of-way), pipeline removals, and bulkhead replacements belongs to the non-Federal sponsor.

Table MR 5-5
Construction Expenditures by Year
(2004 Prices, $1,000)

Year	Construction Costs
2007	29,505
2008	30,188
2009	41,067
2010	41,067
2011	61,018
Total	202,844

Table MR 5-6
Cost Summary
(2004 $1,000, 5.125 Percent)

Construction Costs	202,844
P.V. Construction Costs	220,679
Interest During Construction	17,835
Annual Construction Costs Annual OMRR&R Costs	12,322 3,699
Total Annual Cost	16,021
Base Year	2012

The implementation and operation and maintenance costs of the recommended plan are allocated to the project purpose of commercial navigation. The costs allocated are then apportioned between Federal and non-Federal interests funding sources for the first cost and construction cost of the project based upon applicable laws and policies.

5.2.1 Allocation of Costs Among Project Purposes

All of the project costs (General Navigation Features) of the recommended plan are allocated to commercial navigation.

5.2.1.1 Allocation of Maintenance Dredging Costs

The OMRR&R costs are allocated to OMRR&R for commercial navigation purposes. All costs are allocated to commercial navigation OMRR&R because the disposal is the least-cost environmentally acceptable plan. The estimated average annual maintenance dredging costs for the least-cost environmentally acceptable plan is $2,631,000. The $2,631,000 cost excludes the cost of $948,000 for the annual maintenance dredging of the channels for the Federal navigation projects. It also excludes $120,000 for annual OMRR&R of the existing non-Federal bypass structure.

5.2.2 Apportionment of Costs

The Federal Government and non-Federal sponsor share in the total construction costs of general navigation features assigned to commercial navigation, harbors. Such costs include actual construction costs, costs of preparation of contract plans and specifications, costs of applicable engineering and design, supervision and administration costs, and costs of contract dispute settlement and awards. Cost sharing for the implementation of an inland navigation project with a project depth of 20-feet or less, as specified in WRDA 1986, is as follows. Federal Government would pay 80 percent of the costs of the general navigation features during the period of construction. The general navigation features include all channels, turning basins, training works, disposal dikes, and other features required for navigation.

The non-Federal sponsor must provide all lands, easements, rights-of-way, including lands suitable for dredged material disposal areas and relocations (LERRD) required for project implementation and pay 10 percent of the cost of the general navigation features during the period of construction. In addition, they must pay an additional 10 percent of the cost of the general navigation features, at completion of construction or over a period not to exceed 30 years, with interest, following the period of construction of the cost of the general navigation features. The additional 10 percent would be reduced by credit for the non-Federal sponsor's cost of LERRDs.

A summary of the apportionment of first costs between Federal and non-Federal interests is presented in **table MR 5-7**. The Federal Government's cost in obtaining the required lands is due to administration and review of the non-Federal sponsor's work during the acquisition and the crediting phases. The non-Federal sponsor would not receive credit

for the cost of pipeline removals towards its 10 percent repayment of the costs of the general navigation features following the period of construction. The State of Louisiana can require the pipeline owners to remove the pipelines at the owner's expense. The non-Federal sponsor would only receive credit for costs it incurs directly. Cost estimates for the recommended plan are presented in **Appendix C 1**.

5.2.2.1 Apportionment of OMRR&R Costs

All OMRR&R costs for the access channels, allocated to commercial navigation, would be borne by the Federal Government. These allocations are estimated to total $2,631,000. The non-Federal sponsor would pay for any additional lands, easements, rights-of-way, relocations, and dredged material disposal areas required for OMRR&R.

Table MR 5-7 Apportionment of Costs of Recommended Plan *(2004 Price Levels)*			
ITEM	**FEDERAL**	**NON-FEDERAL**	**TOTAL**
GENERAL NAVIGATION FACILITIES (GNF)			
Lands and Damages	$73,800	$8,200	$82,000
Dredging, Commercial Canal	$9,891,909	$1,099,101	$10,991,010
Dredging GIWW	$29,827,510	$3,314,168	$33,141,678
Dredging Freshwater Bayou Interior	$60,864,724	$6,762,748	$67,627,475
Dredging Freshwater Bayou Bar and Bypass Channels	$12,248,116	$1,360,902	$13,609,018
Bypass Channel Floodgates	$23,770,266	$2,641,141	$26,411,407
Planning, Engineering and Design	$5,578,781	$619,865	$6,198,646
Construction Management	$6,048,652	$672,072	$6,720,724
Subtotal			**$164,781,958**
TOTAL GNF COST DURING CONSTRUCTION	**$148,303,762**	**$16,478,196**	**$164,781,958**
LERRD (for GNF)			
Lands, Easements, and Rights-of-Way	$0	$1,613,000	$1,613,000
Relocations	$0	$0	$0
TOTAL LERRD	**$0**	**$1,613,000**	**$1,613,000**
NON-FEDERAL PAYMENT AFTER CONSTRUCTION			
10% of GNF Less Credit for LERRD	-$14,865,196	$14,865,196	
Local Service Facilities		$14,912,344	$14,912,344
REMOVALS	$0	$21,536,506	$21,536,506
TOTAL PROJECT COSTS	**$133,438,566**	**$69,405,242**	**$202,843,808**
TOTAL IMPLEMENTATION COSTS	**$148,303,762**	**$54,540,046**	**$202,843,808**

5.2.3 Non-Federal Work-In-Kind

The Port of Iberia has expressed a desire to perform work-in-kind in order to provide a deeper navigation channel in an efficient, timely, and cost effective manner and to satisfy a portion of the non-Federal cost share, see **exhibit 1**. The project feature described below is requested to be performed as work-in-kind:

(1) Design, construct, and manage the construction of the By-Pass Channel Floodgate

Some of the reasons why the sponsor should design and build the Freshwater Bayou By-Pass Structures as an in-kind contribution are:

(1) The original 125' By-Pass Channel was constructed by a non- federal sponsor.
(2) The local sponsor and it's engineers have a significant amount of experience in the design and construction of Concrete (water-ballasted) Swing - Barge Structures which incorporate pre-stressed, post tensioned, semi- light weight concrete construction techniques.
(3) The Local Sponsor has supplied the Technical Engineering Appendices to the Feasibility Study which outlines the means, methods and preliminary engineering associated with these By-pass Structures.

Due to the experience factors listed above, the local sponsor should be able complete this portion of the project more efficiently, timely and in a cost effective manner.

The construction cost of this potential work-in-kind is estimated to be $30,637,232. As shown in **table MR5-8**, the sponsor shall be required to provide additional cash contributions to satisfy the non-Federal cost share requirement.

Table MR 5-8
Summary of Federal and Non-Federal Cost Sharing

Federal Share (after project completion)	133,438,566
Non-Federal Share	69,405,242
LERRD	1,613,000
Local Service Facilities	14,912,344
Removals	21,536,506
Value of Proposed Work-In-Kind	30,637,232
Additional Cash Required (total GNF cost required both during and after construction)	706,160
Total Project Cost	202,843,808

5.2.4 Non-Federal Sponsor

The limits of the proposed project extend into Vermilion Parish, which is beyond the jurisdiction of the POI, therefore the Louisiana Department of Transportation and Development (LADOTD) has agreed to act as the non-Federal sponsor for construction of the proposed project. The State of Louisiana enacted legislation (LA R.S.34 section 3301 et seq.) designating LADOTD as the non-Federal Sponsor/Assuring Agency should Congress authorize the Federal navigation project. LADOTD entered into a cooperative endeavor agreement with the POI making them LADOTD's agent for the proposed project. Copies of the Letters of Intent from LADOTD are contained in **exhibit 2**. A copy of a letter from the Governor of the State of Louisiana designating LADOTD as the sponsor is contained in **exhibit 3**. A copy of a similar letter from The Port of Iberia is contained in **exhibit 4**.

5.2.5 Assessment of Financial Capability

The Commander's Assessment of the Local Sponsor's Financing Plan can be found in the exhibits section, **exhibit 5**.

5.3 PROJECT IMPLEMENTATION

Access to the project site would be available from the GIWW, FWB, and the Gulf of Mexico. For the floodgates, the contractor may mobilize his equipment by barge westward on the GIWW and southward on FWB from New Iberia. The construction site for the bypass channel structures is located in an isolated location adjacent to the existing FWB Lock. The road accessing the construction site is only accessible to the existing FWB Lock; thus, limited construction access by road is available. All construction would be performed from barge or water access.

5.3.1 Construction Requirements

Initial construction is anticipated to require a maximum of 11 construction contracts. Breakdown of contracts by reach:

- Commercial Canal – 1 construction contract;
- GIWW –3 construction contracts;
- FWB – 5 construction contracts;
- FWB Bar and By-Pass Channel – 1 construction contract; and
- FWB By-Pass Floodgates – 1 construction contract.

Construction contracts along the GIWW and FWB are mainly driven by the estimated quantity of rock for bank protection. Suppliers were contacted and stated that a reasonable amount of rock per contract would be 300,000 tons to 500,000 tons.

5.3.1.1 FWB Bar Channel

Construction for FWB Bar Channel would consist of one contract solely of hydraulic cutterhead dredging. All material from this reach would be disposed of in an unconfined manner in a beach nourishment disposal area. Placement of rock would not be required. The Bar Channel contract would follow completion of the Commercial Canal, GIWW, and FWB Interior. Based on overall project construction lasting longer than four years, leaving this reach for last would preclude a maintenance cycle prior to completion of the project.

5.3.1.2 FWB Interior and GIWW

Dredging of FWB Interior and GIWW reaches would be completed using a combination of mechanical and hydraulic cutterhead dredge. A maximum of five and three contracts are projected for FWB Interior and GIWW, respectively. Rock placement would be part of each contract. Due to availability of rock, it is anticipated that no more than two contracts (one in each reach) can occur simultaneously.

5.3.1.3 Commercial Canal

Dredging of Commercial Canal would be completed in one contract using a combination of mechanical and hydraulic cutterhead dredge. All material from this reach would be disposed into an upland disposal site on the west bank of Commercial Canal, or into a disposal site in Weeks Bay. Placement of rock would not be required.

5.3.1.4 Bypass Channel Floodgates

One contract would be awarded to construct the bypass channel structures. The approximate sequence of construction for the bypass channel structures is as follows:

- Removal of the existing concrete barge on the north side
- Clearing and grubbing
- Excavation and embankment
- Driving sheet piles for cofferdams
- Driving cutoff sheet piles for receiving structure and T-walls
- Driving PPC piles
- Construction of concrete abutments, T-walls, and pivot structure
- Installation of pivot pile
- Removal of cofferdam
- Installation of swing barge grade beams, sheet pile cutoff wall, and anchor structure
- Simultaneous off-site fabrication of steel swing barge or formation of concrete barge during the above tasks
- Transportation and installation of swing barge
- Construction of I-wall, cattle ramp, and walkways
- Construction of boat dock
- Removal of existing concrete barge on the south side
- Installation of dolphins and navigation aids

5.3.2 Construction Sequence

The duration and scheduling of project construction contracts would depend greatly on the amount of construction funding available. It is anticipated that if adequate funding were available, first construction could be completed in five years as follows:

Construction Year	Project Construction Contract Award
1	GIWW, Contract 1 and 2
2	GIWW, Contract 3 and FWB Interior, Contract 1
3	FWB Interior, Contract 2 and 3
4	FWB Interior, Contract 4 and 5
5	FWB Bar and Bypass Channels; Commercial Canal; Bypass Channel Floodgate Structures

5.3.3 Removals

Numerous facilities have been identified as being impacted by the construction of the project. For the purpose of this report, all pipeline relocations are non-compensable and thus are removals. These removals include oil and gas pipelines, water lines, sewer lines, electrical cables, and natural gas liquids. The pipelines identified as requiring removals include 31 pipelines, 2 submarine power lines, and a sewer lift station.

5.3.4 Real Estate Requirements

The total estimated real estate cost for this project is $1,695,000. This includes LERRD's, labor, and a 25 percent contingency. The upper 9.26 miles involve the Commercial Canal, a channel owned by the POI. The other 48.20 miles involve Federal waterways: 23.11 miles over the GIWW and 25.09 miles over the FWB Canal. The lower 7.10 miles of the FWB Canal Project are in the Gulf of Mexico. The project would also include the deepening of a short bypass channel owned by the AHTD around the east side of the FWB Lock.

The sponsor for the construction of this project, LADOTD, has sufficient authority to acquire and to hold the real estate needed for this project provided the United States agrees to operate and maintain the FWB Bypass Channel, structures and improvements. The Federal Government has extensive channel and disposal easements within the required right-of-way, and approximately 1,730 acres of these would be used for this project. In addition, the Navigation Servitude would be utilized where appropriate.

5.3.5 Bulkhead Replacements

The proposed dredging would require the replacement of approximately 5,000 linear feet of bulkheads in 16 locations within the POI. The existing design conditions for most of the bulkheads were not known; therefore, it was assumed that those bulkheads would be replaced. As-built drawings were provided by some of the businesses; however, for the purpose of this study, it was assumed those bulkheads would also be replaced. The surcharge loading used for preliminary analysis was 200 lbs per square foot. The owner would be required to design for larger loads, as explained in detail in the Engineering Investigations.

5.3.6 Bypass Channel Floodgates

The proposed structural design for the replacement floodgates is in accordance with USACE guidance. The bypass channel floodgates would be constructed of concrete Swing Barge Gates (SBG) with watertight seals at each end of the bypass channel. The dimensions of the SBG would allow a 200-feet bottom width by 20-feet depth opening for navigational tolerance. Rubber seals shall be installed on the bottom and protected side of the swing gate barge. The new structure shall be tied into the existing banks of the bypass channel with the use of pile founded reinforced concrete I-walls and T-walls to protect against saltwater intrusion; however, the floodgates shall not provide flood

protection. The structure would also consist of a 5-pile cluster dolphin to facilitate navigation.

When the SBG is swung into position and ballasted to seal with the sill, the bottom would rest at -23-feet NAVD88 and upper deck would be at 5-feet NAVD88. The gate would bear against the concrete abutments to elevation 5-feet NAVD88. The swing arm would connect the barge gate to the pivot piling. The steel and concrete SBG would be constructed with 14 and 10 watertight compartments respectively. All of the compartments would be accessible from the barge deck via watertight hatches. Cathodic protection would be provided on the barge.

The receiving structure consists of a cast in place concrete foundation system for lateral bearing of the steel barge gate in the closed position, a sheet pile cutoff wall below the sill elevation; riprap and limestone scour protection, walkways, as well as cast in place T-walls on either side of the gate opening. Cathodic protection would be provided for the receiving structure if necessary.

For normal maintenance and operation of the facility, personnel access would be via the FWB bypass channel; therefore, a small boat dock at elevation 3.0-feet NAVD88 would be provided.

5.3.7 Environmental Considerations

5.3.7.1 Environmental Features

The following environmentally acceptable methods for disposal of dredged material would be utilized and prioritized as such within 80 identified disposal site (**plate 1**):

1) Reestablish some of the eroded bank line to prevent further erosion while decreasing maintenance requirements;
2) Create marsh in shallow open water; nourish broken marsh areas; and
3) Dispose material at the mouth of FWB for beach nourishment.

With implementation of the recommended plan all of these disposal methods would be used.

5.3.7.2 Environmental Planning

In addition to the methods described previously for the 80 sites, 4 sites were identified for confined disposal. In these four sites, marsh habitat would be converted to a lower value shrub/scrub habitat. Two of the four sites would be located on the east bank of FWB near the FWB Bypass Lock and the other two would be located along Commercial Canal.

The two sites on the western side of Commercial Canal, which consist of previously impounded fresh marsh, were combined into a 343-acre disposal site, thereby lessening the footprint on the marsh being impacted.

With implementation of the recommended plan all of these disposal methods would be used. The least-cost environmentally acceptable plan would not require mitigation since the planned disposal compensates for any environmental damage that may result for the project.

5.4 OPERATION, MAINTENANCE, REPAIR, REHABILITATION, AND REPLACEMENT (OMRR&R) CONSIDERATIONS

In order to maintain the 20-foot depth in Commercial Canal an estimated 2.6 million cubic yards of material would be dredged for each of the following years 5, 10, 20, 35, and 50 after construction completion. The GIWW would require an estimated 4.2 million cubic yards of material to be dredged in years 10, 25, and 40. The FWB Channel would require an estimated 5.7 million cubic yards of material to be dredged in years 10, 25, and 40. The FWB Bar Channel would require an estimated 2.3 million cubic yards of material to be dredged every 3 years.

5.4.1 Commercial Canal

Maintenance dredging would be required along the Commercial Canal reach of the project. Maintenance quantities are expected to be greater in the first 10-years, followed by diminishing requirements through the remaining project life.

As with dredging and disposal of the initial construction material, maintenance dredging material would be disposed of in the upland confined disposal area along the west bank of Commercial Canal. The first maintenance dredging cycle would be completed, approximately 5-years after initial construction, followed by maintenance cycles in year 10, year 20, year 35, and year 50.

During the 5-year period prior to the first maintenance dredging cycle and during the years between the subsequent maintenance cycles, the initial construction material would consolidate and settle in the disposal area and provide additional capacity for disposal of the maintenance material from the channel.

As always, if during the project life, there is an opportunity to use the maintenance material in a beneficial manner, which proves economically justifiable, the material would be used elsewhere for environmental benefits. Any additional areas would be identified and proposed by the local sponsor.

5.4.2 GIWW

Quantity estimates for maintenance dredging indicate that some material placed along the bank would be eroded into the channel. The erosion of this material is expected to deposit 1.0 to 1.2-feet of material along the channel bottom, varying according to which channel dimensions are being analyzed. Additionally, hurricanes making landfall within the project area would deposit material within the channel. Therefore, maintenance

dredging has been included for the GIWW reach of the project. The first maintenance dredging cycle would be expected approximately 10-years after initial construction, followed by maintenance cycles in years 25 and year 40.

Maintenance of the 28-inch rock placed along the banks during initial construction would also be required due to settlement and subsidence of the rock. The first maintenance cycle for rock refurbishment is expected approximately 10-years after initial construction, followed by maintenance cycles in years 25 and year 40.

5.4.3 FWB

As with the GIWW, quantity estimates for maintenance dredging indicate that some material placed along the bank would be eroded into the channel. The erosion of this material is expected to deposit 1.0 to 1.2-feet of material along the channel bottom, varying according to which channel dimensions are being analyzed. Additionally, hurricanes making landfall within the project area would deposit material within the channel. Therefore, maintenance dredging has been included for the GIWW reach of the project. The first maintenance dredging cycle is expected approximately 10-years after initial construction, followed by maintenance cycles in years 25 and year 40. Maintenance dredging material would be disposed of in the open water disposal areas in Vermilion Bay.

Maintenance of the 36-inch rock placed along the banks during initial construction would also be required due to settlement and subsidence of the rock. The first maintenance cycle for rock refurbishment is expected approximately 10-years after initial construction, followed by maintenance cycles in years 25 and year 40.

5.4.4 FWB Bar Channel

Maintenance dredging required for the FWB Bar Channel are projected to be consistent with current maintenance cycles or approximately one cycle every 3 years. Maintenance quantities are expected to increase consistent with channel dimensions. Additionally, hurricanes and tropical storms would have an effect on the channel maintenance quantities.

For the proposed project, the bar channel is assumed to nearly refill the initial construction dredging every 3 years. Therefore, in the Pre-construction Engineering and Design (PED) phase, alternate FWB bar channel alignments that may use the dominant littoral or cross-coastal currents to reduce the refilling rates will be evaluated to determine if life cycle costs can be reduced. A comparison of reduced maintenance versus initial construction costs would be performed. The analysis may require the development of a sediment model for the coastal area impacted to determine the amount of material being transported across the coastal zone and the proposed project's level of impact.

5.4.5 Rock Placement

Maintenance of the rock placed along both the GIWW and FWB is expected due to settlement and subsidence. Accordingly, 3- maintenance cycles have been included for these reaches. The first maintenance cycle would be at year 10, the second at year 25, and the third at year 40.

5.4.6 Bypass Channel Floodgates Requirements

The bypass channel floodgates would be operated at specific times, when the existing locks cannot facilitate the needs of deep draft and wide vessels. Waterway traffic consists of a mix of commercial barge tows, recreational boats, fishing craft, and other vessels. Operation of the structures would be in accordance with an OMRR&R Manual and a Water Control Manual written specifically for the structures during the construction phase. The main FWB channel is currently a Federally maintained project along with the FWB lock. With implementation of the recommended plan, the lock limits deepwater navigation to elevation -12-feet, thus the FWB Bypass would be the main navigation channel at -20-feet. The Federal Government would be expected to assume maintenance of the FWB Bypass and associated floodgates.

5.5 KEY SOCIAL AND ENVIRONMENTAL FACTORS

5.5.1 Areas of Resolved Controversy

All participating agencies and Vermilion Parish interests expressed concerns that deepening the channels associated with the project would increase salinity levels. The CEMVN investigated the potential for saltwater intrusion from alternatives under consideration and prepared a written report of its findings (**Appendix B**). The investigations concluded that, for a channel 20-feet deep from POI through GIWW and FWB, salinity increases would be negligible and should not result in adverse impacts to water supplies, adjacent marshes, or other designated uses.

5.5.2 Areas of Unresolved Controversy

Responses from scoping efforts indicate that interests within Iberia Parish desire a channel from POI through the GIWW and FWB to the Gulf of Mexico at a 20-foot depth and a 150-foot width. Vermilion Parish interests are concerned with further bank line erosion problems induced by wave wash from vessel traffic as well as salinity intrusion resulting from climatological events. The participating Federal and state agencies are concerned with the basic idea of the continued deepening and leveeing of channels, given that scientific literature states that the deepening of channels is often responsible for the demise of wetlands in the Louisiana coastal marshes.

Throughout the scoping and WVA process, local interests as well as resource agencies expressed the desire to use the Weeks Bay disposal area to block off the GIWW from flowing further into Weeks Bay. However, many pipelines, as well as a couple of minor

channels, exist within this area and would cause concern should this design be used. The largest unresolved issue surrounding the Weeks Bay disposal area, however, is the lack of solid substrate to support containment for the placed disposal material. Any containment to maintain the disposal area would sink thus providing nearly zero protection to the newly placed material.

A total of 2,407,000 cubic yard of material would have to be placed in three designated upland disposal areas. The site near the lock and bypass channel on FWB would be used, out of necessity, to maintain the integrity of the structure as a navigation feature as well as a salinity impediment. The site on the northern reach of the Commercial Canal would be used because of a lack of practicable beneficial use opportunities within this portion of the project area. Because of the problems associated with Louisiana's disappearing wetlands, resource agencies, including the Louisiana Coastal Management Division demand that the construction material not be used for upland disposal but instead transported to other project areas needing material for coastal restoration purposes. At this time, however, the cost of barging the material out of the project area has not been explored because there are no authorized projects in close proximity to the POI project area to make this alternative economically feasible. During the study process or during the construction phase of the POI project, should another practicable alternative to confined upland disposal arise, the material would be transported and used beneficially.

On October 2, 2003, CEMVN received a letter (**Appendix B)** from the U.S. Environmental Protection Agency (USEPA) expressing concern with the Port of West St. Mary Project. The letter made clear the concern that CEMVN needs to disclose that the Port of West St. Mary project is only viable if the POI project is implemented. The overarching concern expressed by USEPA related to the overall impacts to wetlands resulting from multiple navigation improvement projects being considered in coastal Louisiana.

5.6 STAKEHOLDER PERSPECTIVES AND DIFFERENCES

5.6.1 Coordination with the Non-Federal Sponsor

This study was conducted in cooperation with the POI, this study's non-Federal sponsor, and LADOTD, the intended non-Federal sponsor for construction. Meetings, electronic mail, and numerous telephone conversations maintained coordination with LADOTD and POI. Coordination with Federal, state, and local agencies and the public was also maintained throughout the study to assure that all aspects of the water resource problems were addressed. The following statement was provided by the Port of Iberia on 7 March 2006:

> The Local Sponsor's interest in navigation improvements for the POI and Acadiana Region has been established since the early 1900s. In the early years of the port, access to the Gulf of Mexico was primarily needed for recreational and commercial fisheries but as the oil & gas industry developed and matured, the POI systematically became a "hub" for the central Gulf of Mexico offshore oil & gas fabrication and service industry. For many years the POI, Iberia Parish, Acadiana

Business Community, and the State of Louisiana have invested millions of dollars of infrastructure in support of the jobs and economic well-being of the POI. Currently the POI requires significant waterway and channel improvements for it to continue to support and service the oil & gas industry as the industry moves further out into the Gulf of Mexico.

To accomplish this initiative, Congress, in the Water Resources Development Act of 2000, authorized the USACE "to conduct a study to determine the feasibility of carrying out a project for navigation, Port of Iberia, Louisiana" and this report is a corroboration of that effort. As this Feasibility Study was being accomplished, it became apparent to everyone involved that the Principals and Guidelines (P&G) that the USACE typically uses for "Commodity Handling/Shipping Ports" did not capture the true National Economic Development (NED) Benefits for an "Offshore Oil and Gas Fabrication Port" and therefore Congress enacted revised legislation and "new" language that redefined NED Benefits for Offshore Oil and Gas Fabrication Ports. That language, stated in Section 6009 of Public Law 109-13, allows the inequities of the original P&G to be corrected and truly depicts the NED Benefits of this project.

It should also be noted that the economic market share projections, in the With Project Conditions, include a scenario analysis accomplished by the consultants that may (not will) affect the market share and future awards of "deepwater" topsides. We feel that some of these scenarios are unrealistic and that important additional scenarios are ignored. The competition scenario assumes that other businesses not currently fabricating topsides will enter the market and gain market share. The problem with this assumption is the failure to consider labor and human capital assets that have accumulated in the vicinity of the current fabricators. Offshore oil and gas fabrication is highly specialized and a welder (for example) who works in a shipbuilding facility cannot just move into topside fabrication. One of the Port of Iberia's greatest assets is its' labor supply. A few years back, one of the POI's most experienced fabricators in the Gulf, bought a facility in Lake Charles, LA that had 40 foot water depth at the fabrication yard, in an attempt to overcome the depth restrictions at the Port of Iberia. After securing a contract based on prior performance, the fabricator was unable to assemble a labor force at Lake Charles that would allow them to complete the project within a competitive budget. The fabricator lost money on the project and closed down the yard shortly thereafter. Accordingly, we feel that additional competition in this highly competitive and specialized market is unlikely. Also competition and the availability of EPC contracts have historically existed in the POI market and when a "historical" 25% market share is projected for the With Project Conditions, then competition and EPC contracts are already included in the numbers.

In addition, scenarios that are not in the analysis should include national security considerations and the various projections that the market might take based on the price of oil and gas on the world market. Virtually all of the projections that are available were based on $18 to $30 a barrel oil. We feel that it is more likely that oil will reach $100 a

barrel before it again falls to $18 and/or $30 a barrel. These are scenarios both of which would increase demand for Gulf oil and gas and subsequently topsides and result in increases to the projections of the market that are used in the Feasibility Report. There are three projections in the Economic Appendix of the Feasibility Report: MMS high, MMS low, and Infield.

- MMS low ($18 per barrel) and high ($30 per barrel) projections for topside demand are based on a 1996 projection, which does not take any of these additional factors (above) into account. The USACE bases their low and high estimates upon a 90% confidence interval around the mean estimate of undiscovered petroleum reserves in the GOM under federal waters. On its web site (http://www.mms.gov/revaldiv/MMS%2096-0034.htm), the MMS says, of the 1996 *An Assessment of the Undiscovered Hydrocarbon Potential of the Nation's Outer Continental Shelf;* **"This is not the current National Assessment but has been retained for historical information."**

- The Infield projection, which was obtained by the USACE, through its economic consultant GEC, attempts to predict for 50 years the amount of "deepwater" topsides that will be fabricated for the Gulf of Mexico. In doing so, an internal report by Infield was used to develop the market predictions included in the report. The Local Sponsor and the Corps were not allowed to review the data sets that were used in Infield's report due to a "confidentiality" conflict and therefore, were unable to verify its validity or accuracy. Infield's projections also do not include any increases in the price of oil and gas in their 50-year outlook.

It is the position of the Local Sponsor that using the mean number of platforms actually placed on the Gulf deepwater over the last five years is a more reasonable way to project the future. The assumptions are transparent here and they are based on actual market conditions. The Deepwater Royalty Relief Act was passed in 1995 and was fully in effect influencing the market by 2000. Infield's table 6-4 (page 52) is redone below starting with the five years 2000-2004. The table assumes that the average number of deepwater installations over the five years (3.6 rounded to 3.5) will continue to be the annual average between 1012 and 2050. Since these five years occurred when oil was in the $30+ per barrel and prices are now in the $60+ per barrel, this would seem to us to be a reasonable assumption. This projection results in 136 topsides projected for 2012-2050 not 57 as projected by Infield. A 25% share of these for the Port of Iberia is 34, not 14 which would increase all projections by a multiplier of 2.43.

Because of these factors (above), the stakeholder's perspective is that the MMS high projection is still a very conservative estimate and of the estimates contained in the Feasibility Report, this is the only one that should be used!

Also in the Economic Appendix of this report, the USACE bases its economic projections for fabrication contracts for "deepwater" topsides on an assumption

that no major world markets can be expected to offer substantial new opportunities for POI fabricators. The POI has disputed this assumption all along and has sited many instances where this assumption is incorrect. Proof toward the POI's position is verified by the fact that recently Dynamic Industries, Inc., a POI fabricator, was awarded a $150 million dollar contract from Cabrinda Gulf Oil and Gas Company for two offshore platforms and pipelines for the Banzala Lago Development in Angola (The Daily Advertiser dated 08/12/05).

Also, the transportation cost savings (TCS) are not included in this revised report even though they were included in the 2005 Draft Feasibility Study. It is agreed upon by most involved in this economic analysis that a 20-foot channel would definitely allow for larger vessels and commodity transports would contribute transportation cost savings. Due to the inability to "absolutely" quantify them, they were eliminated from the benefit calculations. Therefore, it is the POI's opinion that the Benefit Cost Ratios (BCR) that are being used throughout this report to justify the project are extremely conservative and do not include the entire international market sector, do not include the value of any transportation cost savings and do not offer a true projection of the future market condition.

Because of the time constraints of this project and the minimum requirement of WRDA to only have a BCR greater than one, the POI has agreed to allow this Feasibility Study Report to go unchanged, but would like the reviewer of this document to be aware that it is the opinion of the Local Sponsor that the BCR included in this report is very conservative and should be much higher.

Units	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Australasia	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
East Asia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eastern Europe	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
India	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Latin America	3	2	2	1	2	3	4	4	3	4	4	2	1	1	2	3
Middle East	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
North Africa	0	0	0	0	0	0	2	0	1	0	0	0	0	0	0	0
North America	2	4	2	5	5	1	1	4	3	4	3	4	3.5	3.5	3.5	3.5
NWECS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
South & East Africa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
South East Asia	0	1	0	2	0	0	2	2	5	0	1	0	1	2	3	2
Southern Europe	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
West Africa	0	1	0	2	3	4	3	6	5	2	3	4	3	3	3	2
Grand Total	5	8	4	10	10	8	12	16	18	11	13	10	9	10	12	11

Units	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025		25-29	30-34	35-39	40-44	45-49
Australasia	1	1	0	0	0	0	1	0	0	0		0	0	1	0	0
East Asia	0	0	0	1	0	0	0	0	0	1		1	1	0	0	0
Eastern Europe	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
India	1	0	0	0	0	0	1	2	1	0		1	0	0	0	0
Latin America	3	3	2	2	3	3	2	2	3	2		11	2	4	6	3
Middle East	0	0	0	0	1	0	0	0	0	0		1	0	0	0	0
North Africa	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
North America	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5		17.5	17.5	17.5	17.5	17.5
NWECS	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
South & East Africa	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
South East Asia	1	2	2	1	0	1	0	1	0	2		4	2	6	3	3
Southern Europe	0	1	0	0	0	0	0	0	0	0		0	0	0	0	0
West Africa	2	4	1	2	2	3	2	4	2	0		3	10	2	1	2
Grand Total	13	16	10	11	11	12	11	14	11	10		46	40	38	35	33

CHAPTER 6 PUBLIC INVOLVEMENT AND AGENCY COORDINATION

Many state and Federal agencies participated in this study, as well as, representatives of Vermilion Parish and the POI. This section contains a summary of the public involvement and agency coordination program for the POI study. A more detailed description of this program is included in **Appendix B**.

6.1 NOTICE OF INTENT AND SCOPING

The public and several state and Federal agencies as well as representatives of Vermilion, Iberia, and St. Mary Parishes, and the POI participated in this study.

The public involvement program began with the notice of study initiation for the reconnaissance report, as requested by the POI. Recipients of the notice included Federal and state congressional delegations; state officials; Federal, state, and local agencies; Vermilion, Iberia, and St. Mary Parish residents; and business owners and tenants at POI.

Public involvement in the feasibility phase of the study began with publication of a Notice of Intent to prepare an EIS in the Federal Register. The Notice of Intent explained the proposed study. Two Scoping Meetings were conducted.

The scoping process identified three main groups with interests in the study:

- Individuals and businesses that desire a safe, reliable, and adequate navigation channel to the POI
- State and Federal agencies that are concerned with minimizing adverse environmental impacts of the proposed project and maximizing the beneficial use of the dredge material
- Individuals and businesses located within Vermilion, Iberia, and St. Mary Parishes that want to maintain a freshwater environment to support the existing agribusiness as well as minimize adverse environmental impacts by using the disposal area beneficially

The first Scoping Meeting was held on December 3, 2002, at the Vermilion Parish Courthouse and the second took place on December 10, 2002, at the Iberia Parish Courthouse. The study proposal was explained to the participants that attended the meetings and comments, questions, and suggestions were solicited from the audience. A scoping document, which summarized the comments from the Scoping Meetings was compiled and sent to all of the participants. A copy of the concerns and comments communicated at the meetings is provided in **Appendix B**.

A meeting was held May 22, 2004, at the request of the Vermilion Parish Coastal Coalition. The meeting was conducted at the Louisiana State University Agricultural Extension Office in Abbeville, Louisiana. Study results and an updated study schedule

were presented to the meeting participants, which consisted primarily of port affiliates, ranchers, and farmers.

6.2 COORDINATION WITH USFWS

The USFWS provided a draft Fish and Wildlife Coordination Act Report, which is included in **Appendix B**. The following are the recommendations the USFWS made in the draft Fish and Wildlife Coordination Act Report.

The Service would not object to further detailed planning and implementation of the proposed project, provided that the following recommendations are incorporated to ensure that fish and wildlife resource conservation receives equal consideration during project planning, design, and implementation:

1. Material dredged from the Commercial Canal, GIWW, and FWB should be used to create or restore emergent wetlands to the greatest extent possible.
    a. Bucket-dredged material should be placed no higher than 5-feet NAVD88 to restore original bank lines along the GIWW and FWB.
    b. Bucket-dredged material from Commercial Canal should be placed no higher than 5-feet NAVD88 to create emergent marsh in Weeks Bay.
    c. Hydraulically dredged material from the GIWW, FWB, and Commercial Canal should be used beneficially to create marsh in interior and open-water bay DAs; that material should be placed no higher than 3.5-feet and 5-feet NAVD88, respectively.
    d. Tidal creeks in the bay open-water DAs should be dredged prior to sediment disposal to allow differential settlement and increased habitat variability.
    e. All future maintenance dredge material should also be used beneficially to create marsh (i.e., elevation of 1.4-feet NAVD88 after settlement); primarily in open-water areas within existing DAs, and secondarily, in open-water areas not currently designated as DAs.

    Response: The USACE agrees.

2. Rock armoring along the GIWW and FWB should be placed no higher than 3.5-feet and 5-feet NAVD88, respectively, and rock should be placed no higher than 3-feet NAVD88 along open-water bay DAs.
    Response: The USACE agrees.

3. Between TY-3 and TY-5, “fish dips” or gaps should be created in rock armoring at the mouth of all bayous, trenasses, open water, etc., or at strategic locations recommended by the HET; they should have a minimum width of 20-feet and a bottom elevation no higher than 1-foot NAVD88.
    Response: The USACE agrees.

4. Under their Section 7(a) responsibilities of the ESA, the Corps should convert a 100-acre site adjacent to the southern boundary of the 343-acre SUD on the west bank of Commercial Canal (Figure 4) to high quality bottomland hardwoods through a one-time spoil disposal event with a target disposal elevation no higher than 4-feet NAVD88; appropriate bottomland hardwood species should be planted in consultation with the Service, and a non-developmental easement should be purchased to retain the created habitat value for the life of the project.

Response: The USACE agrees that opportunities to improve Louisiana Black Bear habitat should be explored further.

5. The Commercial Canal DA should be surveyed for potential Louisiana black bear den trees in coordination with the Service.
   Response: The USACE agrees.

6. Material excavated from the FWB Bar Channel should be placed west of that channel and as near to the Gulf shoreline as practical.
   Response: The USACE agrees.

7. All dredge material not needed for the structural integrity of the bypass structure should be used beneficially.
   Response: The USACE agrees.

8. Periodic monitoring of protective rock and mitigation sites should be conducted in cooperation with the Service and other natural resource agencies.
   Response: The USACE agrees.

9. Mitigation lands should be dedicated in perpetuity to fish and wildlife purposes through fee title acquisition or placement of non-developmental easements of those lands.
   Response: The USACE agrees using the assumption that lands rights associated with the State of Louisiana and private interests can be resolved prior to construction.

10. Modification, addition, and/or elimination of project elements during future project planning and construction stages should be fully coordinated with the Service and other natural resource agencies to ensure the continued validity of our impact analysis and mitigation recommendations.
    Response: The USACE agrees.

11. The Corps should continue to coordinate with the Service throughout planning and construction to ensure that the proposed project does not impact waterbird nesting colonies, and threatened or endangered species that may be listed in the future.
    Response: The USACE agrees.

12. Project features should be implemented and operated consistent with the Louisiana Coastal Restoration Plan, as required by Section 303(d) of CWPPRA.
    Response: The USACE would comply with this recommendation.

13. Given the extremely high degree of interdependency between the Port of Iberia project and the recently proposed Port of West St. Mary project, their cumulative impacts and consistency of design, construction, operations, and maintenance should be fully evaluated to ensure that they are implemented in the most environmentally sensitive manner feasible.
    Response: The USACE agrees.

6.3 PUBLIC COMMENTS

Comments received during the public review of the Draft EIS can be found in **Appendix G**. Also in **Appendix G** is the transcript of the public comment meeting held on October 4, 2005.

CHAPTER 7 RECOMMENDATION

I have considered all the significant aspects of this study including the environmental, social, and economic effects, the engineering feasibility, and the comments received from other resource agencies, the non-Federal sponsors, and the public and have determined that the recommended plan presented in this report is in the overall public interest and a justified expenditure of Federal funds. I recommend increasing the project dimensions of several channels from the Port of Iberia, Louisiana to the Gulf of Mexico, to 20-feet deep by 150-feet wide, with such modifications thereof as in the discretion of the Commander, HQUSACE, may be advisable. The channels modified by the recommended plan include the Freshwater Bayou, Freshwater By-Pass, Gulf Intracoastal Waterway and Commercial Canal. The Freshwater Bayou and Gulf Intracoastal Waterway would continue to be federally maintained. The OMRR&R of the Commercial Canal and FWB By-Pass, including the floodgate structures, would become the responsibility of the Federal Government. The Freshwater Bayou Lock is not affected by the recommended plan and would continue to be maintained by the Federal government.

The first cost is estimated at $203,000,000; with net average annual OMRR&R costs currently estimated at $2,631,000. During construction, the first cost allocated to the Federal government is currently estimated at $148,000,000. The total non-Federal cost-share during construction is estimated to be $55,000,000. In general, the navigation features up to 20-feet are cost shared with 80% of the costs being Federal and 20% of the costs being non-Federal. Also included in the non-Federal share of project costs are the Local Service Facilities, Removals, and LERRDs. The recommended plan produces net excess benefits over costs and a benefit to cost ratio of 1.5. None of these benefits are in accordance with the P&G, but have been measured in accordance with Congressionally mandated language.

I make these recommendations with the provision that, prior to the commencement of construction, the non-Federal sponsor will agree to the following requirements:

a. Enter into an agreement, which provides, prior to execution of the project cooperation agreement, 25 percent of design costs;

b. Provide, during construction, any additional funds needed to cover the non-Federal share of design costs;

c. Provide, during the period of construction, a cash contribution equal to 10% of the total cost of construction of the general navigation features (which include the construction of land-based and aquatic dredged material disposal facilities that are necessary for the disposal of dredged material required for project construction, operation, and maintenance, and, for which a contract for the federal facility's construction or improvement was not awarded on or before October 12, 1996);

d. Construct and maintain, at its own expense, all project features other than those for general navigation, including dredged depths commensurate with those in

related general navigation features in berthing areas and local access channels serving the general navigation features;

e. Provide and maintain adequate local service facilities including port facilities and berthing areas open to all on equal terms and provide necessary site development for the regional harbor;

f. Pay with interest, over a period not to exceed 30 years following completion of the period of construction of the project, up to an additional 10 percent of the total cost of construction of the general navigation features. The value of lands, easements, rights-of-way, and relocations provided by the non-Federal sponsor for the general navigation features, described below, may be credited toward this required payment. If the amount of credit exceeds 10 percent of the total cost of construction of the general navigation features, the non-Federal sponsor shall not be required to make any contribution under this paragraph, nor shall it be entitled to any refund for the value of lands, easements, rights-of-way, and relocations in excess of 10 percent of the total cost of construction of the general navigation features;

g. Accomplish all removals determined necessary by the Federal Government other than those removals specifically assigned to the Federal Government;

h. Provide all lands, easements, rights-of-way, and perform or ensure the performance of all relocations determined by the Federal Government to be necessary for the construction, operation, maintenance, repair, replacement, and rehabilitation of the general navigation features (including all lands, easements, and rights-of-way, and relocations necessary for dredged material disposal facilities);

i. At the non-Federal sponsor's option, perform the following work-in-kind to satisfy a portion of the non-Federal share of the total project cost:

Design, construct and manage the construction of the By-Pass Channel Floodgate;

j. Provide the non-Federal share of that portion of the costs of mitigation and data recovery activities associated with historic preservation, that are in excess of 1 percent of the total amount authorized to be appropriated for the project, in accordance with the cost sharing provisions of the agreement;

k. Do not use Federal funds to meet the non-Federal Sponsor's share of total project costs unless the Federal granting agency verifies in writing that the expenditure of such funds is authorized;

l. Give the Federal Government a right to enter, at reasonable times and in a reasonable manner, upon property that the Non-Federal Sponsor, now or hereafter, owns or controls for access to the project for the purpose of inspecting, operating, maintaining, repairing, replacing, rehabilitating, or completing the project;

m. Hold and save the United States free from all damages arising from the construction and operation, maintenance, repair, replacement, and rehabilitation of the project, any betterments, and the local service facilities, except those damages due to the fault or negligence of the United States or its contractors;

n. Comply with all applicable provisions of the Uniform Relocations Assistance and Real Property Acquisition Policies Act of 1970, Public law 91-646, as amended (42 U.S.C. 4601-4655), and the Uniform Regulations contained in 49 CFR Part 24, in acquiring lands, easements, and rights-of-way necessary for the initial construction, operation and maintenance of the project, including those necessary for relocations, borrow materials, and dredged or excavated material disposal, and inform all affected persons of applicable benefits, policies, and procedures in connection with said Act;

o. Comply with Section 221 of Public Law 91-611, Flood Control Act of 1970, as amended (42 U.S.C. 1962d-5), and Section 103 of the Water Resources Development Act of 1986, Public Law 99-662, as amended (33 U.S.C. 2213), which provides that the Secretary of the Army shall not commence the construction of any water resources project or separable element thereof, until the non-Federal sponsor has entered into a written agreement to furnish its required cooperation for the project or separable element;

p. Perform, or cause to be performed, any investigations for hazardous substances as are determined necessary to identify the existence and extent of any hazardous substances regulated under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Public Law 96-510, as amended (42 U.S.C. 9601-9675), that may exist in, on, or under lands, easements, or rights-of-way that the Federal Government determines to be required for the initial construction, operation, and maintenance of the project. However, for lands that the Federal Government determines to be subject to the navigation servitude, only the Federal Government shall perform such investigations unless the Federal Government provides the Non-Federal Sponsor with prior specific written direction, in which case the Non-Federal Sponsor shall perform such investigations in accordance with such written direction;

q. Assume, as between the Federal Government and the Non-Federal Sponsor, complete financial responsibility for all necessary cleanup and response costs of any CERCLA regulated materials located in, on, or under lands, easements, or rights-of-way that the Federal Government determines to be necessary for the initial construction, operation, or maintenance of the project;

r. To the maximum extent practicable, operate, maintain, and repair the project in a manner that will not cause liability to arise under CERCLA;

s. Keep and maintain books, records, documents, and other evidence pertaining to costs and expenses incurred pursuant to the project, for a minimum of 3 years after completion of the accounting for which such books, records, documents, and other evidence is required, to the extent and in such detail as will properly reflect total costs of

construction of the Project, and in accordance with the standards for financial management systems set forth in the Uniform Administrative Requirements for Grants and Cooperative Agreements to State and Local Governments at 32 Code of Federal Regulations (CFR) Section 33.20; and

t. Comply with all applicable Federal and State laws and regulations, including, but not limited to, Section 601 of the Civil Rights Act of 1964, Public Law 88-352 (42 U.S.C. 2000d), and Department of Defense Directive 5500.11 issued pursuant thereto, as well as Army Regulation 600-7, entitled "Nondiscrimination on the Basis of Handicap in Programs and Activities Assisted or Conducted by the Department of the Army", and all applicable Federal labor standards and requirements, including but not limited to 40 U.S.C. 3141 - 3148 and 40 U.S.C. 3701 - 3708 (revising, codifying and enacting without substantial change the provisions of the Davis-Bacon Act (formerly 40 U.S.C. 276a et seq.), the Contract Work Hours and Safety Standards Act(formerly 40 U.S.C. 327 et seq.) and the Copeland Anti-Kickback Act (formerly 40 U.S.C. 276c et seq.).

The recommendation contained herein reflects the information available at this time, 2004 price levels, and current Departmental policies governing the formulation of individual projects. They do not reflect program and budgeting priorities inherent in the formulation of a national civil works construction program, nor the perspective of higher levels of review within the Executive Branch. Consequently, the recommendation may be modified before they are transmitted to the Congress as proposals for authorization and/or implementation funding.

Richard P. Wagenaar
Colonel, U.S. Army
District Commander

Exhibits

EXHIBIT 1

PORT OF IBERIA
WORK-IN-KIND LETTER
MARCH 20, 2006

THE PORT OF IBERIA

The Gulf Coast Cajun Connection

PORT COMMISSION:

Mark J. Doré
President
Michael Resweber
Vice-President
Raymond Bernard, Jr.
Secretary - Treasurer

Millie Martinez
Board Member
Ralph J. Provost
Board Member
Ted Kahn
Board Member
Frank C. Minvielle
Board Member
Joanna D. Durke
Administrative Assistant

March 20, 2006

Colonel Richard P. Wagenaar
U. S. Army Corps of Engineers
New Orleans, District
7400 Leake Avenue
New Orleans, LA 70118

REF: Port of Iberia District, LA

Dear Colonel Wagenaar:

Pursuant to our authority as administrator of the above referenced project for the Louisiana Department of Transportation and Development, the non-Federal sponsor, we wish to advise you of our plan of participation relative to the project. The non-Federal share of the project is currently estimated at $69,405,242.

We understand that the non-Federal share includes providing all lands, easements, rights of way, local service facilities and accomplishing all removals.

We also understand that the non-Federal share includes 10 percent share of general navigation features required during construction and an additional 10 percent upon completion of the project. This amount is currently estimated at $31,343,392.

This letter is offered to advise you of our intention to perform equivalent work in lieu of cash, for a portion of the cash requirement. The following listed project feature is an area in which we believe non-Federal participation would aid our mutual goal of providing a deeper navigation channel in an efficient, timely, and cost effective manner.

(1) Design and Construct the By-Pass Channel Floodgate Project Feature

This amount is currently estimated at $30,637,232 for the design, construction, and construction management. This would leave a balance of $706,160 required in cash.

We offer these comments with the understanding that non-Federal participation will be provided in an amount needed to accomplish the non-Federal funding responsibilities. Our comments should in no way be interpreted as an agreement to provide funding in excess of the non-Federal share.

Should further discussion be required, please do not hesitate to contact me at (337) 364-1065 or (337) 380-6757.

Sincerely,

Roy A. Pontiff
Executive Director

RAP/jdd

EXHIBIT 2

LETTERS OF INTENT
FROM LADOTD DATED
JUNE 3, 2004 AND MARCH 20, 2006

KATHLEEN BABINEAUX BLANCO
GOVERNOR

STATE OF LOUISIANA
DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
P.O. Box 94245
Baton Rouge, Louisiana 70804-9245
www.dotd.louisiana.gov

JOHNNY B. BRADBERRY
SECRETARY

PM-E

June 3, 2004

Colonel Peter J. Rowan
U.S. Army Corps of Engineers
New Orleans District
Post Office Box 60267
New Orleans, Louisiana 70160-0267

Subject: Port of Iberia, Louisiana Project

Dear Colonel Rowan:

This is to advise that DOTD will serve as the local sponsor for the Port of Iberia, LA (Navigation) Project. The State intends to provide all funds necessary to satisfy the total Local Sponsor cost-share requirements of the project. At the present time the financial obligations of the Local Sponsor, totaling 20% of the overall costs are estimated at $41.4 million over the life of the project. DOTD understands that the total cost figure is an estimate and may change as project features are refined and finalized.

DOTD intends to acquire the funding from the State Legislature through the sale of general obligation bonds in the State's Capital Outlay Program and/or any other non-federal funding source that may be available. The State has used this mechanism to fund the local cost share of several large scale, multi-year Corps of Engineers' projects before and we feel this will be appropriate for this project.

If you have any further questions, please contact Mr. Edmond J. Preau, Jr., Assistant Secretary, Public Works and Intermodal Transportation at (225) 379-1253 or myself.

Sincerely,

Johnny B. Bradberry
Secretary

Attachment
cc: Mr. Roy Pontiff
Port of Iberia

AN EQUAL OPPORTUNITY EMPLOYER
A DRUG-FREE WORKPLACE

KATHLEEN BABINEAUX BLANCO
GOVERNOR

STATE OF LOUISIANA
DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
P.O. Box 94245
Baton Rouge, Louisiana 70804-9245
www.dotd.louisiana.gov

JOHNNY B. BRADBERRY
SECRETARY

March 20, 2006

Colonel Richard P. Wagenaar
U.S. Army Corps of Engineers
New Orleans District
Post Office Box 60267
New Orleans, Louisiana 70160-0267

Subject: Port of Iberia, Louisiana Project

Dear Colonel Wagenaar:

This is to advise that the letter of June 3, 2004, stating DOTD's intent to serve as the Local Sponsor for the Port of Iberia, Louisiana (Navigation) Project is still valid. The State intends to provide all funds necessary to satisfy the total Local Sponsor cost-share requirements of the project. At the present time the financial obligations of the Local Sponsor, totaling 20% of the overall costs are estimated to be $69.4 million over the life of the project. DOTD understands that the total cost figure is an estimate and may change as project features are refined and finalized.

DOTD intends to acquire the funding from the State Legislature through the sale of general obligation bonds in the State's Capital Outlay Program and/or any other non-federal funding source that may be available. The State has used this mechanism to fund the local cost share of several large scale, multi-year Corps of Engineers' projects before and we feel this will be appropriate for this project.

If you have any further questions, please contact Mr. Edmond J. Preau, Jr., Assistant Secretary, Public Works and Intermodal Transportation at (225) 274-4106 or myself.

Very truly yours,

Cedric S. Grant

For Johnny B. Bradberry
Secretary

AN EQUAL OPPORTUNITY EMPLOYER
A DRUG-FREE WORKPLACE

EXHIBIT 3

LETTER FROM THE LOUISIANA GOVERNOR DESIGNATING LADOTD AS THE LOCAL SPONSOR APRIL 25, 2005

State of Louisiana

OFFICE OF THE GOVERNOR

Baton Rouge

70804-9004

KATHLEEN BABINEAUX BLANCO
GOVERNOR

POST OFFICE BOX 94004
(225) 342-7015

April 25, 2005

PM 3May05

Colonel Peter J. Rowan, District Engineer
U.S. Army Corps of Engineers, New Orleans District
P.O. Box 60267
New Orleans, LA 70160-0267

Dear Colonel Rowan:

A significant portion of Louisiana's economy relies on the United States' access to the world through our waterway system. To ensure future growth, Louisiana must place a higher priority on water projects that enhance the state's ability to attract industry and retain jobs. The Port of Iberia, La. feasibility study will allow more efficient marine access from the Port of Iberia and other Acadiana Ports in the area to the Gulf of Mexico by enlarging the existing channel. Better access to industry in the south will bring the global market closer to Louisiana citizens and companies.

In accordance with Section 81, Title 38, Louisiana Revised Statues of 1950 and by Louisiana Act 728 (2004), I have designated the Louisiana Department of Transportation and Development as the non-Federal sponsor for the Port of Iberia feasibility study, also known as the Acadiana Gulf of Mexico Access Channel (AGMAC) Deepening Project. DOTD will also be the non-Federal sponsor for modifications to this project and future projects authorized by the Congress of the United States which would provide deeper waterway access to the Gulf of Mexico.

The Department of Transportation and Development, in its capacity as non-federal sponsor, is authorized to execute project cost-sharing agreements with the United States of America for this project and future project modifications. The Department's authority extends to the assurances and cooperation required to plan, engineer, design and construct the project including, but not limited to, acquiring lands, easements, and relocations; and sharing in the cost of construction of the projects. The Port of Iberia will serve as the contact for the Department regarding the AGMAC project. In any agreements, the Department will not be responsible for operation and maintenance of this federal project.

I intend to pursue, through the Louisiana congressional delegation, the authorization and financing of AGMAC and future project modifications.

Sincerely,

Kathleen Babineaux Blanco

Kathleen Babineaux Blanco
Governor

kdb

c: DOTD
Port of Iberia

EXHIBIT 4

PORT OF IBERIA
LOCAL SPONSOR LETTER
MAY 10, 2005

PM

THE PORT OF IBERIA

The Gulf Coast Cajun Connection

PORT COMMISSION:

Ted Kahn
President
Frank Minvielle
Vice-President
Randy Dugas
Secretary - Treasurer

Mark Doré
Board Member
Michael Resweber
Board Member
Raymond Bernard, Jr.
Board Member
Millie Martinez
Board Member
Joanna D. Durke
Administrative Assistant

May 10, 2005

Colonel Peter J. Rowan, District Engineer
U.S. Army Corps of Engineers, New Orleans District
Post Office Box 60267
New Orleans, LA 70160-0267

Dear Colonel Rowan:

The purpose of this letter is to inform you that Governor Blanco has notified the Port of Iberia District, that she has designated the Louisiana Department of Transportation & Development as the non-Federal sponsor for the Port of Iberia Feasibility Study, also known as the Acadiana Gulf of Mexico Access Channel (AGMAC) Deepening Project. This is in accordance with Section 81, Title 38, Louisiana Revised Statues of 1950 and by Louisiana Act 728 (2004). The LA DOTD will also be the non-Federal sponsor for modifications to this project and future projects authorized by the Congress of the United States which would provide deeper waterway access to the Gulf of Mexico.

In its capacity as non-Federal sponsor, the LA DOTD is authorized to execute project cost-sharing agreements with the United States of America for this project and future project modifications. The Department's authority extends to the assurances and cooperation required to plan, engineer, design and construct the project including, but not limited to, acquiring lands, easements, and relocations; and sharing in the cost of construction of the projects.

The Governor indicated that the Port of Iberia will serve as the contact for the Department regarding the AGMAC Project. In addition, in any agreements, the Department will not be responsible for operation and maintenance of this Federal Project.

I am sure you will agree, this is good news for the Port of Iberia! It displays the commitment the Governor has for attaining deepwater access (20') to the Gulf of Mexico for the benefit of the Port of Iberia and the Nation.

The Port of Iberia District Board of Commissioners, and myself, look forward to continuing the working relationship between the USACOE and the Port, for the betterment of all those who will be affected by the realization of this Project.

With kindest regards, I am

Sincerely,

Roy A. Pontiff
Executive Director

RAP/jdd

cc: Mr. Edmond J. Preau, DOTD
Ms. Sharon Balfour, DOTD
O'Neil Malbrough, Shaw Coastal, Inc.

P. O. Box 9986 • New Iberia, LA 70562-9986 • **Roy A. Pontiff,** Executive Director • Phone: (337) 364-1065 • Fax: (337) 364-3136
E-mail: royp@portofiberia.com • Web Site: www.portofiberia.com

EXHIBIT 5

PORT OF IBERIA, LOUISIANA
COMMANDER'S ASSESSMENT OF THE LOCAL SPONSOR'S FINANCING PLAN

Port of Iberia, Louisiana
Commander's Assessment of the Local Sponsor's Financing Plan

Overview

The Port of Iberia, Louisiana, project will deepen the access channels from the Port of Iberia (POI) to the Gulf of Mexico. The project will deepen the Commercial Canal, portions of the Gulf Intracoastal Waterway (GIWW), and Freshwater Bayou from -12-feet MLG (-13.8 NAVD88) to -20-feet NAVD88 in accordance with Section 431 of the Water Resources Development Act of 2000, Public Law 106-541.

The POI participated as the non-Federal cost-share sponsor of the feasibility study, but because the limits of the proposed study extend into Vermillion Parish, which is beyond the jurisdiction of the POI, the Louisiana Department of Transportation and Development (LADOTD) has agreed to act as the non-Federal sponsor for construction of the project.

The fully funded cost estimate of the project is approximately $248 million. The non-Federal sponsor's portion is just over $41 million, of which less that $1 million will be in cash. Part of the total cost of the project are removals of certain pipelines and bulkheads which is not a part of the local sponsor's cost share because they are privately owned and the owners are responsible for these as set forth in the permits issued. The non-Federal sponsor is only responsible for the LERRDS, Work-In-Kind, and Cash as presented in the Fully-Funded Cost Estimate display below.

Fully-Funded Cost Estimate
(000)

Fiscal Year	Federal Share	Non-Federal Sponsor	Non-Federal Total	LERRDS	WIK	Cash	Removals	Bulkheads	Total
2007	$ 27,241	$ 1,991	$ 6,988	$ 1,871	$ -	$ 119	$ 4,997	-	$ 34,229
2008	30,507	149	5,251	-	-	149	5,102	-	35,758
2009	34,672	768	14,994	-	652	116	5,209	9,017	49,666
2010	35,400	784	15,309	-	666	119	5,318	9,206	50,709
2011	34,033	37,665	43,097	-	37,265	400	5,432	-	77,130
Total	$ 161,853	$ 41,357	$ 85,638	$ 1,871	$ 38,583	$ 903	$ 26,058	$ 18,224	$ 247,491

Sources of Funds

LADOTD intends to fund the non-Federal cost share of the project through the sale of general obligation bonds in the state's Capital Outlay Program and /or any other non-Federal funding source that may be available.

The Capital Outlay Program is a five-year capital plan that is managed by the Division of Administration, Facility Planning and Control Section (FPC). According to the Government Performance Project 2005 Report issued prior to Hurricane Katrina, an academic analysis from Syracuse University, funded by a grant from Pew Charitable Trusts, "… the [five-year capital plan] is not considered to be a realistic document, as capital spending is routinely under-funded. This holds true for capital budgeting as well,

with the budget routinely calling for more spending than is appropriated by the legislature. As it stands, a great deal of capital spending seems to be allocated based upon politics rather than need. Louisiana is in the process of creating a statewide system to assess the condition of its infrastructure, which is an attempt to rein in political influence on capital spending."

There is a limit on the capital outlay budget each year, first imposed in the mid nineties at $200 million and construction-inflation adjusted since 2001. The limit for FY2006 is $313 million. In addition to this voluntary limit, there is a Constitutional limit to the total Net State Tax Supported Debt (NTSD) (of which Capital Outlay is a major portion) of 6 percent of revenues. According to FPC, the Constitutional limit has not been a factor in the past, but more debt will be taken on by LADOTD for the Transportation Infrastructure Model for Economic Development (TIMED) program in the near future. LADOTD is implementing the TIMED program, the largest single transportation program in state history, and it is scheduled for completion in 2010. The TIMED program was created by legislation in 1989 as a pay-as-you-go program funded by a four-cent-per-gallon gasoline tax. Its total cost has been estimated at $4 billion. Originally the completion date was estimated at 2031, but the completion date was moved up several years ago to 2010. As a result, the remaining project will be supported by the sale of general obligation bonds instead of the gasoline tax. The first bond sale was in 2002 for $275 million. If additional bond sales are required before 2010, as is almost certain to be the case, the voluntary cap as well as the Constitutional 6 percent limit could be an issue in determining the new Capital Outlay debt capacity for FY 2007 and beyond. The actual capital outlay expenditures for the last five years is approximately $1.04 billion, an average of less than $210 million a year, which is less than the voluntary limit.

Louisiana's general obligation Bond ratings have recently been downgraded by Standard and Poor's (S&P) and By Moody's bond rating services. S&P lowered the general obligation bonds to "A-" from "A". S&P cited "negative economic effects and declining revenues the state has experienced and will continue to grapple with, in the aftermath of Hurricane Katrina." In addition, they cited uncertainties related to the rebuilding of New Orleans and said the state's rating outlook is negative. Moody's lowered the state's general obligation rating to "A2" from "A1". Moody cited "the unprecedented circumstances the state has faced as it has dealt with the economic and financial aftermath of Hurricanes Katrina and Rita." While both agencies downgraded the general obligation bonds of the state, the new ratings still reflect "investment grade" securities, which is the grade of securities many investors favor. It will, however, increase the costs of issuing future general obligation bonds.

Uses of Funds

Since Hurricanes Katrina and Rita, capital outlay demands in Louisiana have increased dramatically. Based upon the capital outlay expenditure over the past five years and the non-Federal share schedule over the next five years in table 1, this project would have consumed about four percent bond sales if it had been part of the last five years. It is almost certain that TIMED will require further substantial bond sales, since the construction of a new Mississippi River bridge at St. Francisville and a major renovation and expansion of the Huey P. Long bridge at New Orleans (both part of TIMED) are just now beginning.

Conclusion

The funding mechanism to be used by LADOTD to fund its share of this project is facing a future of uncertainty, given future priority demand of the TIMED program and repair and replacement of storm-damaged infrastructure. However, given the relatively small amounts of cash that will be required in each of the first four years and the economic development that will result from this project, it is reasonable to expect that LADOTD and the state of Louisiana will prioritize this project and fit it into the state's capital outlay budget in order to cost share this project. It is ultimately political will, not financial capability, which will determine whether this project will be prioritized into the capital outlay program. But it is reasonable to conclude that LADOTD has the financial capacity to provide its share of the funding for this project.

Approved By:

Richard P. Wagenaar
Colonel, U.S. Army
District Commander

3-30-06
Date

Addendum to the Final Environmental Impact Statement

Port of Iberia, Louisiana

Note: This addendum supersedes the findings of the enclosed Final Feasibility Report and Environmental Impact Statement (EIS) dated April 2006. The revised recommendation described in this addendum has resulted through subsequent economic evaluations.

US Army Corps
of Engineers
New Orleans District
Mississippi Valley Division

October 2006

The U.S. Army Corps of Engineers (USACE), New Orleans District (MVN), has prepared this Addendum to the Final Environmental Impact Statement (FEIS) Port of Iberia, Louisiana that was dated April 2006 to evaluate the potential impacts associated with the modification of the 20 foot alternative to a shallower 16 foot. The Recommended Plan (RP) in the FEIS now becomes the Locally Preferred Plan (LPP). The 16 by 150 foot plan is now the Modified Recommended Plan (MRP). This Addendum has been prepared in accordance with the National Environmental Policy Act of 1969 and the Council on Environmental Quality's Regulations (40 CFR 1500-1508), as reflected in the USACE Engineering Regulation, ER 200-2-2.

This section is an addendum to section 2.2.3 (Description of the Recommended Plan) of the FEIS page EIS 2-4.

The MRP would provide for the enlargement of approximately 54 miles of inshore channels along the Fresh Water Bayou (FWB) Alignment and approximately 4 miles of the FWB Bar Channel into the Gulf of Mexico. The channel dimensions would be -16 feet NAVD88 above FWB lock and -17 feet NAVD88 south of the lock (plus an additional 3 feet of advanced maintenance and overdepth dredging) by 150 feet wide. Two new concrete barge floodgates with concrete receiving structures will be built at a -20 foot depth NAVD88. They would be constructed for salinity control and navigation with one at each end of the FWB Bypass Channel. Rationale for choosing the 16 foot alternative versus the 20 foot alternative can be found attached in the Addendum to that Report dated October 2006.

Dredged material would be used to reestablish the bank line, create marsh, and nourish the shoreline resulting in net positive environmental impacts. The Gulf Intracoastal Waterway (GIWW) and FWB channel bank lines would be stabilized to +3.5-feet NAVD88 and +5-feet NAVD88, respectively, with rock armoring of 28-inch and 36-inch stone that would settle to +1.4-feet NAVD88 (which corresponds to the adjacent marsh elevation) within 5 years. Removals would be required for impacted facilities including oil and gas pipelines and electrical lines. Private and commercial bulkheads impacted by the channel enlargement would be replaced or modified as appropriate.

Expected volumes of material excavated during construction from the existing 58 miles of channel through FWB would be approximately 6.8 million cubic yards and would be used beneficially whenever practicable. Table EIS 2-1B shows the dredging quantity needed for each reach of the project.

Table EIS 2-1B: Dredging Quantity by Reach.

Channel Dimensions	Reach	Dredging Quantity (Cy)
(-)16' x 150'	Commercial Canal	1,477,000
	GIWW	1,578,000
	FWB Interior	2,541,000
	FWB Bar Channel	906,685
	FWB Bypass	325,000
Total		6,827,685

This section is an addendum to section 2.2.3.1 (Dredging and Dredge material Disposal) of the FEIS page EIS 2-5 added to "Dredge material Disposal Methods".

A determination was made that the disposal of dredge material would be formulated to avoid and minimize environmental impacts and would not be considered environmental enhancements. The placement sites that were selected for the 16 foot channel (Table EIS 2-3) are a subset of the placement sites for the 20 foot channel.

Table EIS 2-3: Location of borrow material placement sites

Plates	Water Body	Bank line	Negative impacts acres	Beneficial Use Acres	Marsh Type
C2	CMC	W	150.0	0.0	Fresh
C3	GIWW	S	0.0	18.4	Intermediate
C4	Weeks Bay	S	0.0	38	Intermediate
C5	GIWW	S	0.0	9.8	Intermediate
C5	GIWW	S	0.0	16.7	Intermediate
C5	GIWW	S	0.0	6.7	Intermediate
C5	GIWW	S	0.0	19.0	Intermediate
C6	GIWW	N	0.0	27.7	Intermediate
C6	GIWW	N	0.0	18.3	Intermediate
C6	GIWW	N	0.0	10.4	Intermediate
C6	GIWW	N	0.0	9.9	Intermediate
C6	GIWW	N	0.0	3.3	Intermediate
C7	GIWW	N	0.0	32.5	Intermediate
C7	GIWW	N	0.0	15.3	Intermediate
C7	GIWW	S	0.0	15.9	Intermediate
C7	GIWW	S	0.0	37.8	Intermediate
C8	GIWW	N	0.0	3.9	Intermediate
C8	GIWW	N	0.0	1.4	Intermediate
C8	GIWW	N	0.0	9.2	Intermediate
C8	GIWW	N	0.0	18.3	Brackish
C8	GIWW	N	0.0	13.3	Brackish
C9	GIWW	N	0.0	13.8	Intermediate
C9	GIWW	N	0.0	6.2	Intermediate
C9	GIWW	N	0.0	39.7	Intermediate
C10	FWB	NW	0.0	58.3	Intermediate
C10	FWB	NW	0.0	3.2	Intermediate
C10	FWB	SE	0.0	53.6	Intermediate
C10	FWB	SE	0.0	14.5	Intermediate
C11	FWB	NW/W	0.0	35.1	Intermediate
C11	FWB	NW/W	0.0	3.0	Intermediate
C11	FWB	NW/W	0.0	46.3	Intermediate
C11	FWB	SE/S	0.0	10.7	Intermediate
C11	FWB	SE/S	0.0	33.0	Intermediate
C11	FWB	SE/S	0.0	22.2	Intermediate
C11	FWB	SE/S	0.0	66.1	Intermediate
C13	FWB	W	0.0	19.6	Intermediate
C13	FWB	E	0.0	24.5	Intermediate
C14	FWB	W	0.0	39.2	Intermediate

Table EIS 2-3: Location of borrow material placement sites

C14	FWB	E	0.0	5.8	Intermediate
C14	FWB	E	0.0	3.9	Intermediate
C14	FWB	E	0.0	7.8	Intermediate
C15	FWB	W	0.0	21.2	Intermediate
C15	FWB	W	0.0	21.2	Intermediate
C15	FWB	E	0.0	22.7	Brackish
C15	FWB	E	0.0	19.7	Brackish
C15	FWB	E	0.0	24.0	Brackish
C17	FWB	W	0.0	12.5	Intermediate
C17	FWB	E	0.0	17.3	Brackish
C18	Bypass	W	19.4	0.0	Intermediate
C18	Bypass	E	98.5	0.0	Intermediate
C18	Gulf – Beach		0.0	Unknown	

This section is an addendum to the FEIS and should be added as Section 3.3 page EIS 3-20.

3.3 HAZARDOUS, TOXIC, AND RADIOACTIVE WASTE

A Hazardous, Toxic, and Radioactive Waste (HTRW) Initial Site Assessment (ISA) has been completed for this project. The ISA has been prepared under the authority of U.S. Army Corps of Engineers (USACE) Regulation ER 1165-2-132, Water Resource Policies and Authorities, Hazardous, Toxic, and Radioactive Waste (HTRW) Guidance for Civil Works Projects, dated 26 June 1992, and USACE Regulation DIVR 1165-2-9, Water Resource Policies and Authorities, HTRW Policy for Civil Works Projects, dated 14 June 1996. The purpose of the ISA is to gather and evaluate data regarding the existence or potential for encountering HTRW located in the vicinity of USACE Civil Works projects, to ensure that HTRW and contaminant issues are properly considered in project planning and implementation. A land use history evaluation, regulatory agency records research, site reconnaissance inspections, and correspondence and/or interview consultations with relevant federal, state, and local individuals have been accomplished. A copy of the entire Phase I ISA is on file and available for review at the MVN office in New Orleans, Louisiana.

The project site for the proposed improvements is composed of the waterways being enlarged, the dredged material placement areas, and equipment access areas. The project corridor includes the adjacent properties within a 1-mile radius of these features. The full report can be found in appendix B Section 12. Tier I and II evaluations including elutriate testing and salinity modeling were done and show that there were no significant contaminate concentrations or significant exceedances of the state criteria that would warrant a Tier III evaluation.

This section is an addendum to chapter 4 (page EIS 4-1)

A summary of the comparative impacts of the No Action Plan, LPP and the MRP to the significant resources is contained in **Table EIS 4-1**. The sections that follow this table provide a more detailed discussion of these impacts.

***Modification of* Table EIS 4-1 (page EIS 4-1) Comparative Impacts**				
Resource	**Existing Conditions**	**No Action Plan**	**Locally Preferred Plan (20 by 150)**	**Modified Recommended Plan (16 by 150)**
Marsh	Conversion of marsh to open water is occurring primarily from erosion of bank lines, minor subsidence in some areas, and sea-level change.	Several CWPPRA existing projects would protect some of the marshes along the GIWW and FWB with foreshore dikes and terracing projects in Little Vermilion Bay and Little White Lake.	This alternative would build about 4,125 acres of marsh and destroy about 461 acres of marsh over the 50-year project life.	This alternative would build about 971 acres of marsh and destroy about 268 acres of marsh over the 50-year project life.
Essential Fish Habitat (EFH)	The proposed project is located in an area identified as EFH.	In the long-term, there could be a minor impact to EFH as the marsh-open water interface could begin to degrade in this region of coastal Louisiana.	The preliminary finding is that the proposed project may result in primarily temporary and some permanent adverse impacts on some habitats designated as EFH for some life stages of Federally managed fisheries species.	The impacts to EFH from the 16 foot alternative would be similar to those of the 20 foot alternative but to a lesser extent.
Estuarine Water bodies	Important fish species rely on these water bodies for spawning, nursery habitat, and food supply	Continued loss of marsh to open water would eventually cause a reduction in nursery habitat for fisheries.	Creation of marsh in open water would be beneficial to wildlife and fisheries resources.	The impacts to estuarine water bodies from the MRP would be similar to those of the 20 foot alternative. Deepening and widening existing waterways could allow high salinity water to enter the inshore wetlands but to a lesser degree with a 16 foot channel. This increase would not happen as long as the FWB structures are maintained and operated to prevent salinity intrusion.

Modification of **Table EIS 4-1 (page EIS 4-1)** **Comparative Impacts**				
Resource	**Existing Conditions**	**No Action Plan**	**Locally Preferred Plan (20 by 150)**	**Modified Recommended Plan (16 by 150)**
Beaches	Beaches provide recreation and protect brackish and saline marshes. Erosion of beaches can be a serious problem because of certain climatological events. Surf zone provides habitat for estuarine and marine fish species.	The beach area would continue to shift during certain climatological events. CE-MVN would continue to dispose of material during maintenance of the existing channel near the beach. No adverse impact to estuarine and marine fish species.	Material dredged from station 850 of FWB to the 18- foot contour would be placed in the gulf near the shoreline to reduce erosion along beaches on the west side of the channel. Minor burial impacts will cause temporary displacement of fisheries and benthic communities in the surf zone.	Less material would be available for beach nourishment since the depth is shallower and the channel would only go out to the 16 –foot contour (Plus 3 additional feet for advanced maintenance and overdepth).
Gulf of Mexico Water bottoms	Variable depths and bottom conditions support various life stages of fish and shellfish.	Current dredging and disposal operations by CE-MVN would continue to disrupt near-shore benthic habitat in offshore reach.	Occasional dredging of offshore reach would disrupt benthic habitat in offshore channel.	The area of impact in the channel and along the shoreline would be larger than the No Action Plan since dredging farther out into the gulf would be necessary and more material would be excavated, but less than the LPP
Threatened and Endangered Species	Sea turtles may occur within the project area. Commercial Canal runs through occupied Black Bear Habitat. Brown Pelicans, Piping plovers, and other wading birds utilize habitats within the project area.	Continued marsh loss would reduce or threaten existing habitat for listed species.	There would be no significant adverse impacts to listed species. Marsh creation and erosion control would preserve habitat for some species.	The MRP would have a similar impact on Threatened and Endangered Species as the previously RP (LPP).
Esthetic Open Spaces	Project area encompasses a variety of habitats.	Erosion would continue to reduce the visual marsh, thereby producing more water. Esthetic conditions would diminish accordingly.	Marsh would be created and beaches would be maintained through placement of dredge material. Marsh grasses and associated plants would colonize these areas, thus increasing overall esthetics.	If implemented, the MRP would have similar impact on the Esthetic value as the LPP and would offer an opportunity for replanting and rebuilding coastal marshes with the material dredged and placed beneficially for bank stabilization.

Modification of **Table EIS 4-1 (page EIS 4-1)** **Comparative Impacts**				
Resource	**Existing Conditions**	**No Action Plan**	**Locally Preferred Plan (20 by 150)**	**Modified Recommended Plan (16 by 150)**
Recreation	Recreation activities taking place in the study area consist of boating, fishing, hunting, crabbing, and bird watching. Beach use includes fishing.	Recreational use of the area would continue, as it exists now, although it may diminish over the long-term from erosion of marshes.	Dredge material would be used to protect beaches and create marsh acreage to help maintain recreational needs.	The change in the recommended plan will not change the impacts of this project on recreation.
Cultural	Over 30 previously recorded cultural resource sites in the project area are being impacted by erosion and oil and gas exploration activities.	Continued erosion coupled with other development activities would further destroy sites.	Known sites located along the channels and marsh bank lines would likely be stabilized and protected through placement of dredge material. Additional cultural resource investigations would be conducted in remaining high probability areas.	The proposed 16’ channel depth does not appreciably change the impact analysis for cultural resources compared to the 20’ alternative. The CE-MVN plans to conduct additional archaeological investigations in all high probability areas delineated and recommended by Lee and others (2004).
Socio-economic	The economy of the area is highly dependent on oil and gas production, agriculture, and commercial fishing. Public facilities and services are typical of rural communities.	No major changes anticipated.	Would either not be affected or would be slightly to moderately affected in a positive manner.	There is no change to the socio-economic section or subsections. With either the 16' channel or the 20' channel the relative impacts are the same.
Air Quality	Air quality in the area is good. Businesses at the Port of Iberia do not emit large quantities of pollutants.	No significant change expected.	Air pollution levels would not be raised significantly.	The MRP would have a similar impact on air quality as the previously RP (LPP) and would not significantly impact air quality.
Hydrology and Water Quality	In general, the water quality of the study area was “fully supporting” most uses.	Projected water quality for the study area would be expected to remain similar to current conditions.	The effects of construction due to dredging and disposal areas may include (but are not limited to) typical short-term and long-term effects.	The proposed 16’ channel depth does not appreciably change the impact analysis for hydrology of the area or water quality resources compared to the 20’ alternative.

This section is an addendum to chapter 4 section 4.1 (page EIS 4-2)

4.1 MARSH

New Wetland Value Assessments (WVAs) were not run for the MRP placement areas. These placement areas are a subset of the placement areas for LPP (Table EIS 2-3).

This section is an addendum to chapter 4 section 4.1 (page EIS 4-3)

4.1.2b Modified Recommended Plan

Direct impacts to the marsh resources would be similar to those found in the LPP. Direct impacts from installation of structural measures (e.g. locks and rock protection) or placement of dredge material on marsh habitat would occur only where existing marsh within the direct footprint of the construction work is disturbed, destroyed, or otherwise harmed. The lock would continue to be operated with the primary objective of controlling salinity intrusion and the bypass channel would remain closed until a structure needed to bypass the lock. During these events, the bypass channel structures would operate in a manner to minimize salinity intrusion as much as practicable.

Construction of the proposed channel deepening of the MRP would create approximately 856 acres of intermediate marsh and 115 acres of brackish marsh (Table EIS 4-2B). Most of this acreage would be bank line reclamation sites along the GIWW and FWB. No fresh marsh would be created. Rocks placement would have indirect effect on marsh behind it by reducing wake induced erosion. Approximately 150 acres of fresh marsh and 118 acres of intermediate marsh would be impacted by the placement of dredge material on them (plates C2 and C18), which would then be converted to an upland confined disposal area. The eastern perimeter of the bypass channel is currently used as an upland disposal site for previous maintenance events and is approximately 19.4 acres. A 98.5 acre confined disposal site exists immediately adjacent to the channel, but has not been used for many years. This site presently functions as intermediate marsh under forced drainage. This site would be maintained as upland disposal area throughout the 50-year project life in order to impede higher saline waters from undermining the existing bank lines during storm events.

Table EIS 4-2B: Marsh impacts				
Marsh Type	Negative impact		Beneficial Use	
	Acres	AAHU	Acres	AAHU
Fresh	150	20.42[1]	0	0
Intermediate	118	50.5[2]	856	654.69[1]
Brackish	0	0	115	104.09[1]

[1]AAHUs for MRP not recalculated. The number shown based on quick ratio calculation:
AAHU for 16 foot = (AAHU for 20 foot/Acres for 20)*Acres for 16 foot
[2]Same Acres and AAHU for 16 foot as for 20 foot.

None of the material dredged during construction or maintenance of the offshore reaches would be used directly for marsh creation/nourishment. Rather, material from these reaches

would be deposited in the Gulf of Mexico, immediately adjacent to the gulf shoreline, in order to reduce the rate of shoreline erosion as well as protect and preserve the marshes immediately landward of the shoreline

This section is an addendum to chapter 4 section 4.2 (page EIS 4-7)

4.2 ESSENTIAL FISH HABITAT

4.2.2b Modified Recommended Plan

The impacts to EFH from the 16 foot alternative would be similar to those of the 20 foot alternative. The preliminary finding is that the proposed project may result in primarily temporary and some permanent adverse impacts on some habitats designated as EFH for some life stages of Federally managed fisheries species. However, overall creation and protection of wetland habitats in the project area should satisfy the objective of essential fish habitat pursuant to the Magnuson-Stevens Fishery Conservation and Management Act. The proposed action would have a long-term and overall net environmental benefit, especially to estuarine emergent wetlands.

This section is an addendum to chapter 4 section 4.3 (page EIS 4-8)

4.3 ESTUARINE WATER BODIES

4.3.2b Modified Recommended Plan

The impacts to estuarine water bodies from the MRP would be similar to those of the 20 foot alternative. Deepening and widening existing waterways could allow high salinity water to enter the inshore wetlands, but to a lesser degree with a 16 foot channel. This increase would not happen as long as the FWB structures are maintained and operated to prevent salinity intrusion.

The larvae and small juveniles of many species would be impacted most by turbidity caused by dredging operations. Losses to bottom-dwelling animals would be temporary. These invertebrates would recolonize dredged areas after dredging operations are completed. Any decrease in primary productivity of the estuarine waters caused by increased turbidity during dredging operations would be short-term. No adverse long-term effects on water quality would be expected.

This section is an addendum to chapter 4 section 4.4 (page EIS 4-9)

4.4 BEACHES

4.4.2b Modified Recommended Plan

Dredge material from the entrance channel extending approximately 4 miles to the 16 - foot contour would be used for beach nourishment along the western flanking shore of FWB. Dredge material disposal in shallow water, along the shoreline, would directly and indirectly protect interior saline marshes, which provide valuable nesting and feeding areas for a large number of avian species. The USFWS will be consulted to determine whether the MRP would comply with the Coastal Barrier Resources Act of 1982 as reauthorized by the Coastal Barrier Improvement Act of 1990 upon completion of the final permit application package.

This section is an addendum to chapter 4 section 4.5(page EIS 4-10)

4.5 GULF OF MEXICO WATER BOTTOMS

4.5.2b Modified Recommended Plan

Effects would be limited to the channels and the shoreline area. The area of impact in the channel and along the shoreline would be larger than the No Action Plan since dredging farther out into the Gulf would be necessary and more material would be excavated, but less than the LPP.

Mobile species of crabs, fish, and shrimp would probably avoid the hydraulic dredging operations, but slow-moving or immobile benthic species would probably be destroyed. Rapid recolonization of dredged water bottoms by benthic invertebrates would be expected and no adverse effects to the aquatic species that occur in these areas would be expected.

This section is an addendum to chapter 4 section 4.61 (page EIS 4-10)

4.6 THREATENED/ENDANGERED SPECIES

4.6.2b Modified Recommended Plan

The MRP would have a similar impact on Threatened and Endangered Species as the previously RP (LPP). Initial consultation with NMFS and USFWS resulted in the design of dredging and disposal of material in a manner that would not likely have an adverse impact on listed species for the 20 foot alternative. The dredging and disposal plan for the MRP is a subset of that plan and hence has no adverse impact on the listed species.

This section is an addendum to chapter 4 section 4.7 (page EIS 4-11)

4.7 ESTHETIC VALUES/OPEN SPACE

4.7.2b Modified Recommended Plan

If implemented, the MRP would have similar impact on the Esthetic value as the LPP and would offer an opportunity for replanting and rebuilding coastal marshes with the material dredged and placed beneficially for bank stabilization.

This section is an addendum to chapter 4 section 4.8 (page EIS 4-11)

4.8 RECREATION

4.8.2b Modified Recommended Plan

The change in the recommended plan will not change the impacts of this project on recreation.

This section is an addendum to chapter 4 section 4.9 (page EIS 4-12)

4.9 CULTURAL RESOURCES

4.9.2b Modified Recommended Plan

The proposed 16’ channel depth does not appreciably change the impact analysis for cultural resources compared to the 20’ alternative. The CEMVN plans to conduct additional archaeological investigations in all high probability areas delineated and recommended by Lee

and others (2004). These investigations will take place during the next project phase and will include the surveying of terrestrial and submerged project areas that would be directly impacted by proposed construction. Section 106 consultations with the Louisiana SHPO are ongoing and would be concluded prior to initiation of any project construction activities. However, if during construction activities, any unrecorded cultural resources were determined to exist within the proposed project boundaries, no work would proceed in the area containing these cultural resources until a USACE archeologist was notified and final coordination with the SHPO was completed.

This section is an addendum to chapter 4 section 4.10 (page EIS 4-13)
4.10 SOCIO-ECONOMIC RESOURCES

There is no change to the socio-economic section or subsections. With either the 16' channel or the 20' channel the relative impacts are the same.

This section is an addendum to chapter 4 section 4.11 (page EIS 4-16)
4.11 AIR QUALITY
4.11.2b Modified Recommended Plan

The MRP would have a similar impact on air quality as the previously RP (LPP) and would not significantly impact air quality.

This section is an addendum to chapter 4 section 4.12 (page EIS 4-16)
4.12 HYDROLOGY AND WATER QUALITY
4.12.2b Modified Recommended Plan

The proposed 16 foot channel depth does not appreciably change the impact analysis for hydrology of the area or water quality resources compared to the 20’ foot alternative.

This section is an addendum to chapter 5 (page EIS 5-1)
CHAPTER 5 CUMULATIVE IMPACTS

There are two very distinct reasonably foreseeable futures connected to this project area.

A. A 16 foot channel alternative that has structures designed for 20 foot depth leads directly to an assumption that the local sponsor or other entity could deepen the channel sometime in the future. However, such an action would require further environmental investigation, permitting or NEPA compliance, documentation and mitigation if necessary.

B. The present U.S Senate version of the Water Resource Development Act (WRDA) includes the following language: “Port of Iberia, Louisiana.—The project for navigation, Port of Iberia, Louisiana, at a total cost of $204,600,000, with an estimated Federal cost of $129,700,000 and an estimated non-Federal cost of $74,900,000, except the Secretary in consultation with Vermillion and Iberia Parishes, is directed to use available dredged material and rock placement on the south bank of the Gulf Intracoastal Waterway and the

west bank of the Freshwater Bayou Channel to provide incidental storm surge protection". If this version of the WRDA is enacted by Congress, then there could be additional impacts not discussed in this EIS. This plan could also lead to a future levee being placed along a portion of this alignment. However, such an action would require further environmental investigation, permitting or NEPA compliance, documentation and mitigation if necessary.

Table EIS 5-1
Geographic Levels Used For Cumulative Impacts Analysis

General Geographic Level	Study Specific Geographical Area	Abbreviation Used in Text
National Level	United States	US
Watershed Level	Mississippi River Watershed	MRW
State Level	Louisiana	LA
Study Area Level	Tech/Vermilion Basin	TVB
	Mermentau Basin	MB

This section is an addendum to chapter 5 section 5.1 (page EIS 5-4)

5.1 MARSH

Possible Future Action

LA, TVB, and MB

Large programs are now in effect (e.g. CWPPRA, Barataria Terrebonne National Estuary Program [BTNEP], etc.) to develop information, raise consciousness, and implement solutions to stabilize coastal wetlands in Louisiana. However, it is questionable that the wetland losses can be stopped and doubtful that these programs will reverse the major losses that have already occurred. CE-MVN has a continuing authority project (CAP) section 1135 study underway to place rock foreshore protection dikes to reduce land loss due to erosion and wave wash.

Under future A (described on page 10), depending on the timing of the deepening from 16 to 20 feet, the wetlands created by deepening to 16 feet could be impacted.

Under future B (described on page 10), wetland loss due to the project would not be offset by beneficial use and there could be an increase in direct marsh impacts as well as indirect impacts.

Cumulative Impacts

TVB and MB
The proposed project would convert 150 acres of fresh marsh to upland confined disposal areas. However, the overall impact to marsh would be positive, as the majority of the material would build marsh with dredge material. Depending on which foreseeable future A, or B, there could be and increase in either minor or significant negative impacts to wetlands in the area.

This section is an addendum to chapter 5 section 5.2 (page EIS 5-5)

5.2 ESSENTIAL FISH HABITAT

Possible Future Actions

TVB and MB
The continued uses of the FWB lock to reduce salinity intrusion, which indirectly prevents the loss of marsh EFH. The FWB lock would be used as presently authorized by the River and Harbor Act of July 14, 1960, and the Master Water Control Plan, Mermentau River Basin, Louisiana, 1988.

Under future A (described on page 10), depending on the timing of the deepening from 16 to 20, feet the wetlands created by deepening to 16 feet could be impacted as well as the EFH associated with them.

Under future B (described on page 10), wetland loss due to the project would not be offset by beneficial use and there could be an increase in direct marsh and EFH impacts as well as indirect impacts.

Cumulative Impacts

TVB and MB
Localized increase in some types of wetland EFH due to restoration efforts. Depending on which foreseeable future A, or B, there could be and increase in either minor or significant negative impacts to wetlands in the area hence impacts to EFH.

This section is an addendum to chapter 5 section 5.3 (page EIS 5-7)

5.3 ESTUARINE WATER BODIES

Possible Future Actions

TVB and MB
The MRP would convert water bottoms to marsh creation thus affecting the benthos. Creation of wetlands would provide nursery, foraging and grow out areas for fisheries resources utilizing the marshes.

Under future A (described on page 10), more water bottoms would be converted to wetlands.

Under future B (described on page 10), water bottoms would be converted to upland with very little habitat value.

Cumulative Impacts

Proposed action impacts are additive to existing impacts by permitted marsh management activities and authorized CWPPRA. Depending on which foreseeable future A, or B, there could be an increase in impact to water bottoms in the area.

This section is an addendum to chapter 5 section 5.6 (page EIS 5-10)

5.6 THREATENED/ENDANGERED (T&E) SPECIES

Future Possible Action

MRW, LA, TVB, and MB

Implementation of the MRP would create habitat for T&E species and would not require mitigation. The implementation of LCA & CWPPRA projects would likely result in additional marsh management permits and create, protect, and restore habitat vital to T&E species.

Under future A (described on page 10), depending on the timing of the deepening from 16 to 20 feet, the wetlands and habitat for T&E species created by deepening to 16 feet could be impacted.

Under future B (described on page 10), wetland loss due to the project would not be offset by beneficial use and there could be little new habitat for T&E species created other than black bear.

This section is an addendum to chapter 5 section 5.7 (page EIS 5-11)

5.7 ESTHETIC VALUES/OPEN SPACE

Future Possible Action

LA, TVB, and MB

The MRP may enhance the esthetic value of the area by creating new wetlands and preventing further erosion along the channel bank lines. Other ports may pursue deeper draft channels and thus further degrade the natural beauty of the wetlands.

Under future A (described on page 10), depending on the timing of the deepening from 16 to 20 feet, the wetlands created by deepening to 16 feet could be impacted but there would be an additional amount of wetland created.

Under future B (described on page 10), potential wetland would be replaced by a dredged material embankment which would degrade the natural beauty of the nearby wetlands.

Cumulative Impacts

LA, TVB, and MB
Wetlands would be created in proportion with the quantity of material being dredged though channel deepening is not a favorable environmental practice. Other ports may pursue deeper draft channels and thus further degrade the natural beauty of the wetlands. Depending on which foreseeable future A, or B, there could be a decrease in the esthetics of the area.

This section is an addendum to chapter 5 section 5.8 (page EIS 5-12)
5.8 RECREATION

Possible Future Action

US and MRW
Potential loss of recreational resources due to continued coastal land loss.

Under future A (described on page 10), depending on the timing of the deepening from 16 to 20 feet, the wetlands recreation benefits created by deepening to 16 feet could be impacted due to both loss of habitat and two disturbances.

Under future B (described on page 10), a dredged material embankment could provide less recreation activity then wetlands.

This section is an addendum to chapter 5 section 5.10 (page EIS 5-15)
5.10 SOCIO-ECONOMIC RESOURCES

Cumulative Impacts
The cumulative impact to the socio-economic resources under future B could be significantly positive or negative depending whether or not the dredged material decreases storm surge or increases residence time of trapped flood waters.

This section is an addendum to chapter 5 section 5.12 (page EIS 5-23)
5.12 HYDROLOGY AND WATER QUALITY

Possible Future Actions

US, MRW, LA, TVB, and MB
Under future B (described on page 10), there is a potential to reduce storm surge, but at the same time, there is the potential to increase the residence time of flood waters.

This section is an addendum to section 7.1 of the FEIS

A letter dated October 12, 2006 from the USFWS provides their recommendations and is attached to the end of this Addendum. These recommendations supplement, but do not replace, those provide in the October 2005 Final Fish and Wildlife Coordination Act Report for this project.

MITIGATION

The appropriate application of mitigation is to formulate an alternative that first avoids adverse impacts, then minimizes adverse impacts, and lastly, compensates for unavoidable impacts. Changing from the LPP to the MRP minimizes impact to marsh by reducing from 461 acres to 268 acres negatively impacted. Placement of material in areas that were adjacent to the Commercial Canal, GIWW, and FWB channels, as done in the past, was rejected because it is no longer environmentally acceptable to dump dredge material on healthy marsh and create uplands. As a result, in order to avoid and minimize impacts to wetlands as defined by the President's Council on Environmental Quality, dredge material disposal methodologies were formulated with the assistance of Federal and state resource agencies in an effort to identify the least environmentally damaging disposal plan. A monitoring plan would be developed to document the extent of marsh created from dredge material disposal and to help guide disposal plans for maintenance dredging. No impacts have been identified that would require compensatory mitigation.

PREPARED BY

This Addendum was prepared by Nathan Dayan, biologist, with relevant sections prepared by: Case Rowe - HTRW; Mike Swanda - Cultural Resources; Hope Pollman - Recreational Resources; Lauren Hatten - water quality; and Carol Burdine and Victor Landry - Project Manager. The address of the preparers is: U.S. Army Corps of Engineers, New Orleans District; Planning, Programs, and Project Management Division, CEMVN-PM; P.O. Box 60267; New Orleans, Louisiana 70160-0267.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
646 Cajundome Blvd.
Suite 400
Lafayette, Louisiana 70506
October 12, 2006

Colonel Wagenaar
U.S. Army Corps of Engineers
Post Office Box 60267
New Orleans, Louisiana 70160-0267

Dear Colonel Wagenaar:

Pursuant to a request by Mr. Nathan Dayan of your Environmental Planning and Compliance Branch, the U.S. Fish and Wildlife Service (Service) has reviewed your agency's October 2006, Addendum to the April 2006, Final Environmental Impact Statement (FEIS) for the Port of Iberia Deepening Study. That study and FEIS addressed the proposed deepening of navigation channels from the Port of Iberia to the Gulf of Mexico via the Commercial Canal, Gulf Intracoastal Waterway (GIWW), and Freshwater Bayou Canal (FBC). The Recommended Plan, referred to in the Addendum as the Locally Preferred Plan, consisted of deepening those channels to a depth of 20 feet. The Addendum evaluates a second alternative, the Modified Recommended Plan (MRP), which includes deepening of the Commercial Canal, GIWW, and FBC to a depth of 16 feet. The Service provides the following recommendations under the authority of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.), the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.), and the National Environmental Policy Act of 1969 (83 Stat. 852, as amended; 42 U.S.C. 4321-4347). The recommendations supplement, but do not replace, the position and recommendations provided in our October 2005 Final Fish and Wildlife Coordination Act Report, which is incorporated in its entirety by reference herein.

According to the Addendum, the rock channel bank protection associated with the MRP would remain unchanged. Similarly, the dredged material disposal sites described in the Addendum are a subset of those that were previously evaluated in the FEIS. Notable changes involving the proposed dredged material disposal sites include a reduction in the acreage of fresh marsh needed for an upland disposal site along Commercial Canal from 343 acres to 150 acres, and the reduction in marsh acreage beneficially created from 4,125 acres to 1,153 acres.

The FEIS Addendum is well-written and comprehensively addresses the potential impacts of the MRP. Accordingly, the Service would not object to further detailed planning and implementation of the proposed MRP, provided that the above-described measures and the recommendations set forth in our Final Coordination Act Report are fully addressed and incorporated in the project. We concur with the Addendum statement in page EIS 5-1, Item B. If such a change is passed in the Water Resources Development Act, the current proposed project would have to be entirely re-evaluated to adequately assess the impacts of that authorization.

Likewise, the Service would seek adequate funding to fully participate in that feasibility level re-evaluation study. We look forward to continued close cooperation with the Corps of Engineers and the local sponsor throughout this feasibility study to ensure that fish and wildlife resource conservation receives equal consideration with the developmental project purposes during future project planning, design, and implementation.

Thank you for continuing to foster the cooperative relationship between your professional staff and this office that has characterized planning of the Port of Iberia project to date. Please have your staff contact me or Robert Dubois (337/291-3127) of this office if you have any questions regarding our comments.

Sincerely,

Russell C. Watson
Supervisor
Louisiana Field Office

cc: LA Dept. of Wildlife and Fisheries, Baton Rouge, LA
LA Dept. of Natural Resources (CMD), Baton Rouge, LA
NMFS, Baton Rouge, LA
EPA, Dallas, TX

US Army Corps
of Engineers
New Orleans District
Mississippi Valley Division

Port of Iberia, Louisiana

Final Feasibility Report

APRIL 2006

Final
Environmental Impact Statement

FINAL
ENVIRONMENTAL IMPACT STATEMENT

PORT OF IBERIA, LOUISIANA

Lead Agency: U.S. Army Corps of Engineers-Mississippi Valley Division, New Orleans District (CE-MVN)

ABSTRACT: The Commercial Canal provides a navigable channel for industries in the Port of Iberia to reach the Gulf of Mexico via the Gulf Intracoastal Waterway (GIWW) through either Vermilion Bay or by connecting with Freshwater Bayou (FWB), which terminates in the Gulf of Mexico. At present, the Port of Iberia maintains the Commercial Canal at approximately a 13- foot depth National Geodetic Vertical Datum (NGVD) (15.58 foot depth North Atlantic Vertical Datum 1988 (NAVD88)) and a width that ranges from 70 – 150 feet. The existing Federal authority for the maintenance of the GIWW and FWB inshore reaches is -12 feet Mean Low Gulf (MLG) (-13.8 feet NAVD88) by 125-foot dimensions. The offshore reach of FWB is maintained at approximately 12 MLG by 250 feet dimensions. The Port of Iberia has requested that the Federal government examine the need for channel enlargement. The sizes and drafts of semi-submersible drilling rigs, which would likely use the Port of Iberia in the future if an adequate channel were available, were used as a basis for developing plan alternatives. The access route through Vermilion Bay was eliminated from further study as a result of issues related to salinity intrusion and fluid mud problems. With the No Action Plan, the Port of Iberia would continue to periodically dredge the Commercial Canal to maintain a controlling depth of approximately –13 feet NGVD and a width ranging from 70 – 150 feet. The Federal Government would continue to maintain the GIWW and FWB at the existing depths of 12 MLG – 125-foot dimensions for the inshore reaches and 12 MLG – 250 for the offshore reach of FWB. Action alternatives were formulated to address the need for improved navigation access to the Port of Iberia. The action alternatives included examining the 16, 18, and 20-foot depths over bottom with a 150-foot channel width. Dredge material from construction and maintenance would be used for rebuilding eroded bank lines, creating marsh, and erosion control along the Gulf of Mexico shoreline. All of the alternatives analyzed resulted in positive environmental benefits. The Recommended Plan (RP) was identified as being synonymous with the locally preferred plan.

COMMENTS: For further information, please contact Mr. Nathan S. Dayan, U.S. Army Corps of Engineers, New Orleans District, P.O. Box 60267, New Orleans, Louisiana 70160-0267. Telephone: (504) 862-2530

NOTE: Information, displays, maps, etc., discussed in the Feasibility report and Appendixes are incorporated by reference in the Environmental Impact Statement.

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SUMMARY

S.1 OVERVIEW OF STUDY AREA

At present, the Gulf Intracoastal Waterway (GIWW) intersects the Commercial Canal, which provides access to the Port of Iberia. Freshwater Bayou (FWB) intersects the GIWW to the southwest of the Commercial Canal. The current Federal responsibility is to maintain the GIWW channel with dimensions of approximately 12 feet Mean Low Gulf (MLG) (13.8 North Atlantic Vertical Datum 1988 (NAVD88)) by 125 feet. The FWB channel is maintained to dimensions of approximately 12 feet MLG by 125 feet for the inshore reach and 12 feet MLG by 250 feet for the offshore reach.

The Port of Iberia study area is located at the inland terminus of the Commercial Canal in Iberia Parish, in south-central Louisiana. The Commercial Canal is approximately 13 feet deep National Geodetic Vertical Datum (NGVD) (15.58 feet deep NAVD88) ranges from 70 to 150 feet wide, and extends from the Port of Iberia near New Iberia, Louisiana, to the GIWW. The Port of Iberia is bounded by the cities of Lafayette and New Iberia to the north, the Mermentau Basin to the west, the Atchafalaya River Basin to the east, and the Gulf of Mexico to the south. **Figure S-1** is a map of the project area.

S.2 PURPOSE

The purpose of this study is to determine the feasibility of deepening the existing navigation channels between the Port of Iberia and the Gulf of Mexico. The reconnaissance report recommended deepening the Commercial Canal, portions of the GIWW and FWB from an average depth of 12 feet MLG to a depth of 20-feet NAVD88 above the FWB lock and to a depth of 21-feet NAVD88 below FWB lock from the Port of Iberia to the 21-foot contour NAVD88 in the Gulf of Mexico. In this area, 0.0 NAVD88 is approximately 1.8 MLG. The average low daily stage (ALDS) measured at the gage on the north side of the FWB lock is 0.0 NAVD88 and –0.9 NAVD88 measured at a gage south of the lock. Both are based on a six and a half year period of record (1987 to 2003). This means the depth of the channel would be increase by approximately 6.2 feet above the lock and 7.2 feet below the lock and there would be approximately 20 feet of water over the bottom based on the ALDS.

The Port of Iberia has indicated that they would be willing to participate in a cost-shared navigation project up to a maximum authorized depth of 20-feet NAVD88. However, the limits of the proposed project extend into Vermilion Parish, which is beyond the jurisdiction of the Port of Iberia. Thus, the Louisiana Department of Transportation and Development (LADOTD) agreed to act as the non-Federal sponsor for construction of the proposed project. The State of Louisiana enacted legislation (LA R.S. 34:3301 et seq.) designating LADOTD as the non-Federal Sponsor/Assuring Agency should Congress authorize the Federal navigation project. LADOTD entered into a cooperative endeavor agreement with the Port of Iberia making them LADOTD's agent for the proposed project.

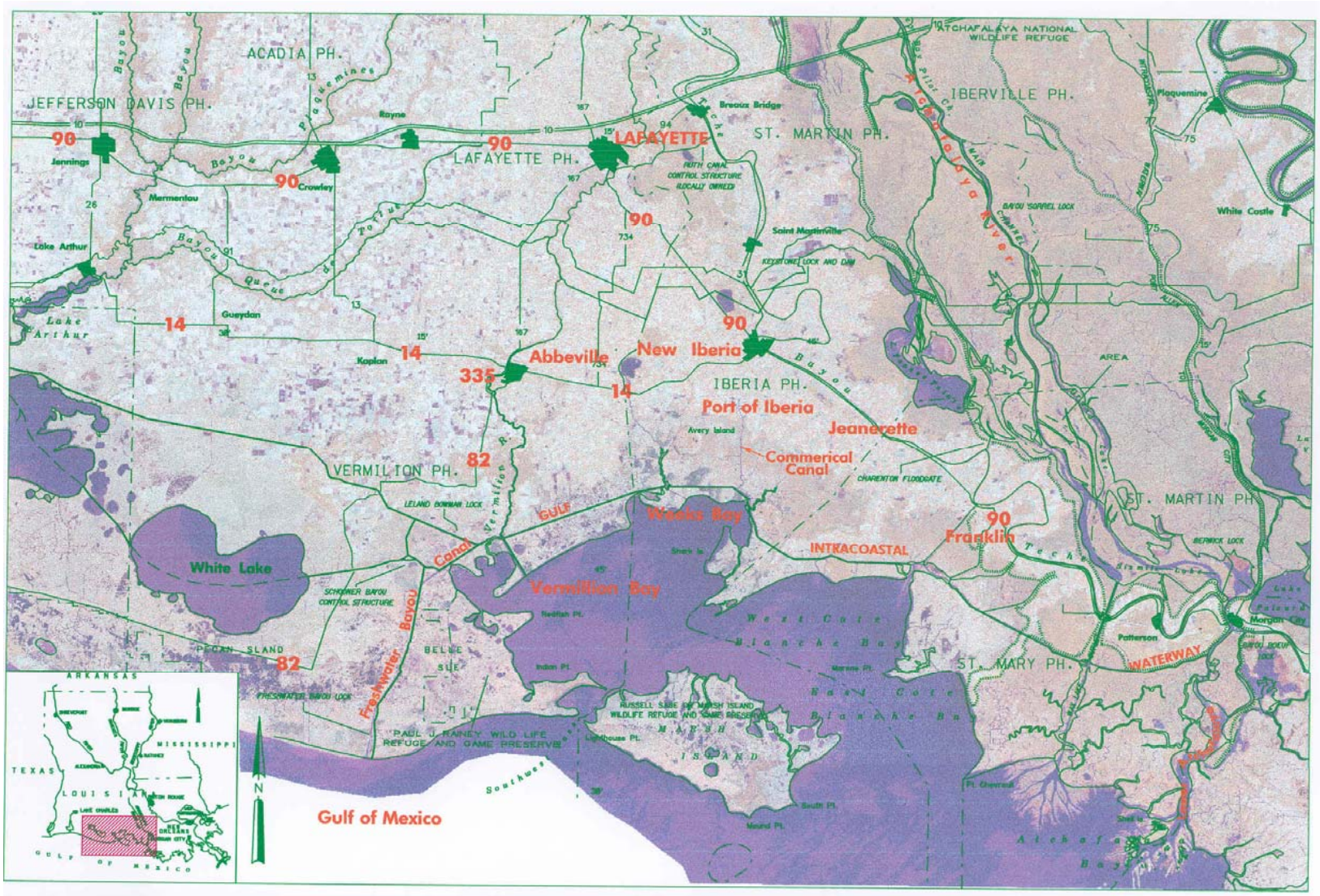

Figure S-1 Map of Port of Iberia Study Area

S.3 PROBLEMS, NEEDS, AND OPPORTUNITIES

The problems, needs, and opportunities identified in this study relate to the predominant economic engines of the study area; large offshore rig fabricators and offshore petroleum service firms.

Recent technology has brought oil production into deeper and deeper waters, which require larger and larger fabrication units; therefore, companies must have the capability of transporting these larger structures to the Gulf of Mexico. However, the current shallow depth of water access to and from the port is becoming increasingly inadequate for local industries to compete for and capitalize on the growing deepwater industry. Therefore, this feasibility study focused on improving navigation access to enable the existing Port of Iberia infrastructure (industry and skilled labor) to continue to support the national energy and development needs.

The original GIWW authority specified maintaining a maximum width of 125-foot. In many reaches of the GIWW, the banks are now as much as 400 to 600 feet wide. This bank erosion is contributing to the erosion of already deteriorating wetlands, along with subsidence and saltwater intrusion.

There is also the need and opportunity to reduce the rate of marsh loss near the Port of Iberia. The current rate of bank line erosion near the GIWW and the FWB is 3.4 feet per year (ft/yr) and 4.9 ft/yr respectively. The current rate of marsh loss in the study area is mainly due to erosion caused by wave action on unprotected shorelines. Some loss of internal marsh areas has occurred in the past from development activities and from impoundments associated with local land management practices, but the current loss rate on internal marsh areas is relatively low compared to other areas of south Louisiana.

S.4 ALTERNATIVES

Several alternatives existed for routing Port of Iberia vessel traffic to the Gulf (Coastal Engineering and Environmental Consultants, Inc. 2001 and USACE August 2002). All alternatives used the existing channel, known as the Commercial Canal, and connected with the GIWW. The first alternative was to route vessel traffic west on the GIWW and south through the Vermilion River Cutoff to the Gulf of Mexico. The second alternative was to route the vessel traffic southwest through Vermilion Bay and into the Gulf of Mexico. The third alternative was to route vessel traffic east on the GIWW and south through the Lower Atchafalaya River. Initial investigations that explored the maintenance of navigation channels through Vermilion Bay and the Lower Atchafalaya River revealed that the existence of fluid mud rendered these channels inefficient and, in the case of Vermilion Bay, increased the likelihood of saltwater intrusion. Furthermore, the Lower Atchafalaya River route requires an increased travel distance and would likely cause added transportation delays because of existing structures. Thus, enough information existed to rule out these three alternatives from further study.
The fourth alternative was to route the vessel traffic west on the GIWW and then south on FWB to the Gulf of Mexico. A decision was reached early within the study process

that the only reasonable navigation route, when considering economic and environmental issues, was the use of approximately 60 miles of existing channels utilizing the FWB. The sizes and drafts of semi-submersible drilling rigs projected to use the port in the future, under various scenarios, was used to formulate channel dimensions for the FWB Alignment. Under the No Action Plan, the Port of Iberia would continue to utilize the existing access channels at their current dimensions. As a result, the alternatives analyzed in detail, within the Environmental Impact Statement (EIS), consist of No Action Plan and the Recommended Plan (RP) of routing Port of Iberia vessel traffic through FWB to the Gulf of Mexico, utilizing 60 miles of existing channels.

Expected volumes of material excavated from the existing 60 miles of channel, through FWB, would range from approximately 12 to 18 million cubic yards and would be used in the least environmentally damaging way practicable. After discussions with advisory and regulatory agencies, it was decided that all use of dredge material would be formulated as the least cost environmentally acceptable plan, although the project may result in positive environmental outputs. This fits with the United States Army Corps of Engineers (USACE) Environmental Operating Principles.

S.5 RATIONALE FOR THE RECOMMENDED PLAN

In order to comply with the section of the requirements (ER 1105-2-100) that states, “A sufficient number of alternatives must be analyzed to insure that net benefits do not maximize at a scale smaller than the recommended plan,” the decision was made to analyze several channel depth variations in detail. The sizes and drafts of deepwater topsides projected to use the port in the future, under various scenarios, were used to formulate channel variations for the FWB Alignment. These variations consisted of channel depths from 16 feet to 20 feet over bottom. These channel dimensions were all based on the same overall plan, the fourth preliminary alternative (herein after referred to as FWB Alignment).

For each variation, a subsequent benefits survey was conducted as well as a detailed cost estimate of construction and continuous maintenance. Fabricators claiming change of origin benefits stated that any channel depth less than 20 feet would preclude their bidding on deep-water fabrication contracts.

A scenario-based matrix (table MR 4-4 of feasibility report) was used to determine the RP. See the feasibility report section 4.3 for discussion of the rationale for picking the RP. The FWB Alignment with a 20-foot NAVD88 by 150-foot channel became the RP.

As a result, the only alternatives analyzed in detail were the RP and the No Action Plan.

S.6 DESCRIPTION OF THE RECOMMENDED PLAN

The variation of the FWB Alignment that provides for a 20-foot deep over bottom by a 150-foot wide channel with a least cost, environmentally acceptable dredge material disposal plan was designated as the RP. This is the plan that the non-Federal sponsor identified as the maximum dimensions due to their budget constraints. The RP however, was not designated as the National Economic Development (NED) plan because no attempted was made to verify this plan as the NED plan. ER-1105-2-100 22 Apr 2000 3-2b(10) Categorical Exemption to NED Plan, states in part:

> For…channel deepening studies were the non-Federal sponsor has identified constraints on channel depths it is not required to analyze project plans (deeper) than the plan desired by the sponsor…The recommended plan must have greater net benefits than smaller scale plans, and a sufficient number of alternatives must be analyzed to insure that net benefits do not maximize at a scale smaller than the recommended plan.... The analysis of alternatives must be comprehensive enough to meet the requirements of NEPA.

The analysis used for this study satisfied all of these requirements for a categorical exemption to NED Plan.

This study did not identify a National Ecosystem Restoration (NER) plan because the proposed action does not constitute an ecosystem restoration action. Discussions with resource agencies during coordination verified that this project would not satisfy the requirements for a NER plan. Furthermore, the study authorization was limited to navigation only. However, the resources agencies identified every possible opportunity to use dredge material in a beneficial manner. These opportunities were addressed in the plan formulation.

Environmental Features of the RP

The majority of the marshes within the project area are healthy in comparison to other basins along coastal Louisiana (Chabreck, R.H. 1982), thus dredge material disposal presents one of the biggest challenges of this study. Placement of material in areas that were adjacent to the Commercial Canal, GIWW, and FWB channels, as done in the past, was rejected because it is no longer environmentally acceptable to dump dredge material on healthy marsh and create uplands. As a result, in order to avoid and minimize impacts to wetlands as defined by the President's Council on Environmental Quality, dredge material disposal methodologies were formulated with the assistance of Federal and state resource agencies in an effort to identify the least environmentally damaging disposal plan.

The following environmentally acceptable methods for disposal of dredge material would be utilized and prioritized as stated such within 80 identified disposal sites (**EIS plate 1**):

1) Reestablish some of the eroded bank line to prevent further erosion while decreasing maintenance requirements;
2) Create marsh in shallow open water; nourish broken marsh areas; and
3) Dispose material at the mouth of FWB for beach nourishment.

With implementation of the RP, all of these disposal methods would be used.

Environmental Impacts of the RP

Effects to habitats in the project area were quantified using Wetland Value Assessment models (WVAs) (see appendix B for a detailed explanation of WVAs). A comparison of impacts by habitat type is contained in **table S-1**. The net environmental effect of the RP was positive. Direct impacts of the RP would include the loss of 343 acres of drained and impounded fresh marsh; 118 acres of perched intermediate marsh; and 1,324 acres of fresh, intermediate, and brackish shallow open water habitats. Project-related indirect benefits would include the creation of approximately 100 acres of fresh marsh, 2,618 acres of intermediate marsh, and 445 acres of brackish marsh through the deposition of dredge material in bay open-water disposal areas, interior open-water disposal areas, and bank line disposal areas. Indirect impacts would also include the protection of those disposal areas through the placement of rock armoring along the bay open-water disposal area shorelines and the GIWW and FWB bank line disposal areas. Current estimates of the net impacts of the RP as measured by the WVA include the loss of 138.5 Average Annual Habitat Units (AAHUs) for perched intermediate marsh. Estimated AAHU gains from beneficially depositing dredge material into bay open-water, interior open-water, and bank line disposal areas include 108 AAHUs for fresh marsh, 4,127 AAHUs for intermediate marsh, and 478 AAHUs for brackish marsh (USFWS Port of Iberia Channel Deepening Study, Draft Coordination Act Report).

Table S-1
Impact Comparisons by Habitat Type

Habitat Types	Existing Conditions		No Action *TY - 50		RP *TY – 50	
	Acres	HUs	Acres	AAHUs	Acres	AAHUs
Fresh Marsh	46	69.51	46	173.78	131	281.81
Intermediate Marsh	1247	1310.28	74	2450.8	2618	6578.09
Brackish Marsh	301	269.23	0	497.74	445	976.2
Marsh converted to upland	501	279.62	501	274.99	501	85.93
Shallow Open Water	239	541.34	383	1793.44	1324	3197.55
Other	2685	0#	4015	0#	0	0#
Total	5019	2470	5019	5191	5019	11120

** TY=Target year*
 # WVA does not assign value to channel bottom and deepwater bay habitat

Based on preliminary structure designs, use of the WVA methodology revealed that the project would have net positive impacts on intermediate and brackish marsh. The proposed project would have a net negative impact on fresh marsh. The project would also cause a temporal loss of estuarine fishery habitat caused by the conversion of estuarine water bodies and, in some areas, submerged aquatic vegetation to supratidal elevations within the planned disposal areas. Following settlement, construction of fish dips, gapping/degrading containment dikes, and construction of tidal creeks, however, estuarine fishery support functions would be restored and enhanced in comparison to pre-project conditions.

Minor adverse environmental impacts would occur to non-motile aquatic species in the areas of dredging and disposal from increased turbidity and entrapment in dredge material. Temporary impacts to terrestrial wildlife habitat occurring on the upland disposal site could be expected.

Environmental Planning

In addition to the methods described previously for the 80 sites, 4 sites were identified for confined disposal. In these four sites, marsh habitat would be converted to a lower value shrub/scrub habitat. Two of the four sites would be located on the east bank of FWB near the FWB Bypass Lock and the other two would be located along Commercial Canal.

The two sites on the western side of Commercial Canal, which consist of previously impounded fresh marsh, were combined into a 343-acre disposal site, thereby lessening the footprint on the marsh being impacted.

With implementation of the RP, all of these disposal methods would be used.

S.7 DESCRIPTION OF NO ACTION PLAN

With the No Action Plan, it is anticipated that the Commercial Canal would continue to be maintained as a 13 feet deep NGVD by 70-150 feet deep channel by the Port of Iberia and the GIWW and FWB would continue to be Federally maintained at approximately 12 MLG by 125 foot dimensions for the inshore reaches. The offshore reach of FWB would continue to be Federally maintained at approximately 12 feet MLG by 250 feet dimensions.

The GIWW and the inshore reaches of FWB would continue to be self-maintaining. The offshore reach of the FWB would continue to be dredged every 3 years with the material being placed adjacent to the shoreline to the west of the mouth of FWB. The bypass channel associated with the southern end of FWB would continue to remain closed except when it is necessary to allow a structure to bypass the locks. During these events, the bypass would be dredged to allow passage. The locks would continue to be operated in a manner to reduce salinity intrusion as outlined in the “Master Water Control Plan, Mermentau River Basin, Louisiana, June 1988” (USACE 1988).

S.8 ENVIRONMENTAL COMMITMENTS

Certain environmental commitments are an integral part of the RP and mitigate project impacts. These commitments address the methods by which dredge material would be disposed. A dredge material site management plan is provided in appendix B. A summary of environmental commitments is provided in **table S-2**.

Table S-2
Environmental Commitments

Significant Resource	Commitment
Marsh	The majority of the material, from the inshore channels, between the southern 4 miles of Commercial Canal and station 850 of FWB, would be used beneficially for bank line reclamation, marsh creation, and marsh nourishment. A bucket dredge would be used for the bank line disposal areas to maximize marsh creation, behind the armored area, between years 3 and 5 of the project. Native vegetation would be planted as needed. Openings along the bank would occur every 1,000 feet to assure fisheries access. This method of material disposal was adopted to curtail the further loss of intermediate and brackish marsh because of being located in a high traffic environment. Marsh creation and nourishment would be accomplished with a hydraulic dredge after all of the bank line disposal opportunities were exhausted.
Beaches and Gulf Water Bottoms	Dredge material deposited adjacent to the beaches would be placed in the inter-tidal zone and surf zone. All of the material from project construction would be placed to the west of the channel. Material from maintenance dredging would also be placed to the west of the channel.
Miscellaneous	A monitoring plan would be developed to document the extent of marsh created from dredge material disposal and to help guide disposal plans for maintenance dredging. The scope of the monitoring plan has not been determined but would likely include low-level aerial photography, ground truthing, elevation surveying, GIS mapping, and monitoring of vegetative cover composition. At a future date, construction material otherwise slated for upland disposal or shallow open water placement, in the intertidal zone, would be used for other projects seeking to construct coastal restoration projects that need the material. At present, other studies on less expedited schedules are looking into absorbing the costs of using available material on the Port of Iberia Project. This action would meet the approval of all interested parties as well as concur with the USACE's, Environmental Operating Principles.

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CHAPTER 1 INTRODUCTION

1.1 STUDY AUTHORITY

The Port of Iberia, Louisiana Study was conducted in accordance with Section 431 of the Water Resources Development Act (WRDA) of 2000, Public Law 106-541, and dated 11 December 2000, which reads as follows:

> ***SEC. 431. IBERIA PORT, LOUISIANA.***
> The Secretary shall conduct a study to determine the feasibility of carrying out a project for navigation, Iberia Port, Louisiana.

In May 2001, the Port of Iberia requested that the U.S. Army Corps of Engineers (USACE) consider deepening the access channels from the port to the Gulf of Mexico. Reconnaissance study efforts were initiated in 2001 and a reconnaissance report was completed in August 2002 recommending further Federal involvement.

1.2 STUDY AREA DESCRIPTION

The study area, as shown in **figure EIS 1-1**, is located in Iberia Parish in south-central Louisiana at the inland terminus of the Commercial Canal. The POI District's territorial limits originally encompassed a large portion of Iberia Parish, including the City of New Iberia. The territorial limits of the district were expanded through Act 486 of 1978 to comprise most of Iberia Parish, including two neighboring municipalities – the City of Jeanerette, and the Town of Loreauville. The study area is located in Congressional Districts LA-3 and LA-7.

The Port of Iberia is bounded by the cities of Lafayette and New Iberia to the north, the Mermentau Basin to the west, the Atchafalaya River to the east, and the Gulf of Mexico to the south. The total study area encompasses approximately 59 miles. The Port of Iberia is generally centered along the banks of Commercial Canal at a location approximately 7.5 miles north of the GIWW, 9 miles north of Weeks Bay and 4.5 miles southwest of the City of New Iberia. Major communities in the study area include New Iberia, Lafayette, Jeanerette, Franklin, Abbeville, and numerous smaller communities.

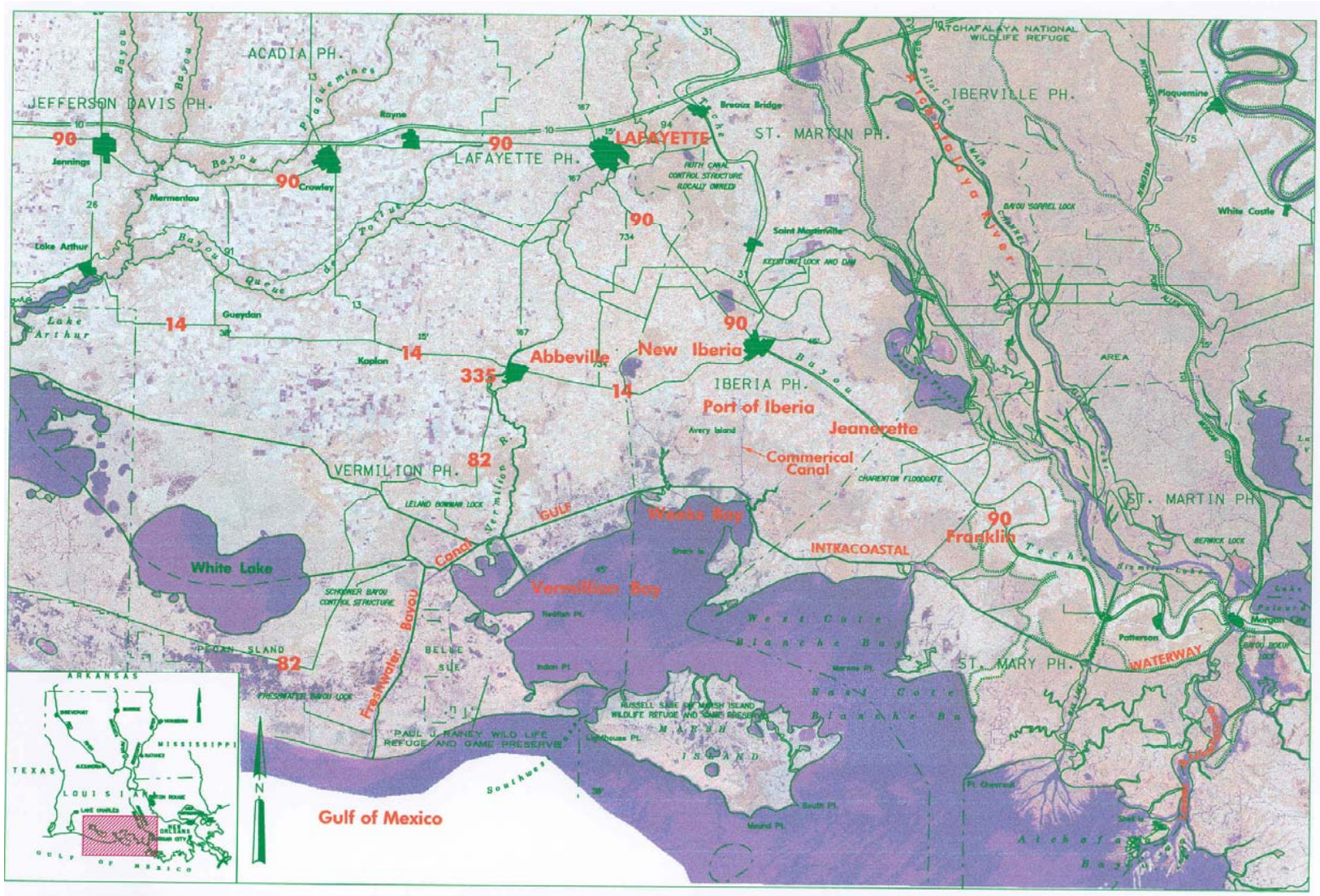

Figure EIS 1-1 Map of Port of Iberia Study Area

1.3 PURPOSE AND SCOPE

The Port of Iberia was authorized and constructed by Act 128 of the Louisiana State Legislature in 1938, to provide a navigation outlet for trade and transportation of offshore fabrication modules.

The purpose of this study is to determine the feasibility of deepening the existing navigation channels between the Port of Iberia and the Gulf of Mexico. The reconnaissance report recommended deepening the Commercial Canal, portions of the GIWW and FWB from an average depth of 12 feet MLG to a depth of 20-feet NAVD88 above the FWB lock and to a depth of 21-feet NAVD88 below FWB lock from the Port of Iberia to the 21-foot contour NAVD88 in the Gulf of Mexico. In this area, 0.0 NAVD88 is approximately 1.8 MLG. The average low daily stage (ALDS) measured at the gage on the north side of the FWB lock is 0.0 NAVD88 and –0.9 NAVD88 measured at a gage south of the lock. Both are based on a six and a half year period of record (1987 to 2003). This means the depth of the channel would be increase by approximately 6.2 feet above the lock and 7.2 feet below the lock and there would be approximately 20 feet of water over the bottom based on the ALDS.

The Port of Iberia has indicated that they would be willing to participate in a cost-shared navigation project up to a maximum authorized depth of 20-feet. However, the limits of the proposed project extend into Vermilion Parish, which is beyond the jurisdiction of the Port of Iberia. Thus, the Louisiana Department of Transportation and Development (LADOTD) agreed to act as the non-Federal sponsor for construction of the proposed project. The State of Louisiana enacted legislation (LA R.S. 34:3301 et seq.) designating LADOTD as the non-Federal Sponsor/Assuring Agency should Congress authorize the Federal project. LADOTD entered into a cooperative endeavor agreement with the Port of Iberia making them LADOTD's agent for the proposed project.

The scope of this feasibility study is to develop and evaluate measures to improve navigation access from the Port of Iberia to the Gulf of Mexico; improve and maintain the current state of the environmental resources; and minimize any future marsh degradation.

Economic studies considered the influence of offshore oil and gas production in the Gulf of Mexico region, while engineering and environmental studies were limited to the immediate areas that would be physically affected or influenced, by construction and maintenance activities. Coordination with Federal, state, and local agencies and the public was maintained throughout the study to assure that all aspects of the water resource problems were addressed.

1.4 FEDERAL INTEREST

The Commerce Clause of the Constitution, and subsequent court decisions that define the right to regulate navigation and improvement of the navigable waterways established the Federal interest in navigation. The merits of navigation projects are currently measured

against a single Federal objective, National Economic Development (NED), in accord with the Water Resource Council's Policies and Guidelines (P&G). With the advent of non-Federal cost sharing, state and local water resource objectives are also incorporated into the planning process. The process consists of a series of steps that identify the problems, needs, and opportunities associated with the Federal, state, and local objectives. This process culminates in the selection of a recommended plan. The P&G states:

> The Federal objective of water and related land resources project planning is to contribute to national economic development consistent with protecting the nation's environment, pursuant to national environmental statutes, applicable executive orders, and other Federal planning requirements.

However, Congressionally mandated language dated May 11, 2005, has expanded the guidelines for calculating the NED (Section 6009 of Public Law 109-13, Emergency Supplemental Appropriations Act for Defense, the Global War on Terror, and Tsunami Relief, 2005). This recent Congressionally mandated language states:

> ***SEC. 6009. OFFSHORE OIL AND GAS FABRICATION PORTS***
> In determining the economic justification for navigation projects involving offshore oil and gas fabrication ports, the Secretary of the Army, acting through the Chief of Engineers, is directed to measure and include in the National Economic Development calculation the value of future energy Exploration and production fabrication contracts and transportation cost savings that would result from larger navigation channels.

Under the legislation, the full monetary value of any contract awarded to the Port of Iberia for the deepwater fabrication of offshore exploration and production equipment is included in the calculation of benefits. Furthermore, any benefit using Deepwater Fabrication contracts is to be counted as a benefit for project justification regardless if work was displaced from foreign or domestic yards.

Consequently, the Feasibility report and Economic appendix present an economic analysis that is in accordance with the P&G as well as an economic analysis based on the interpretation of the May 11, 2005, Congressionally mandated language.

1.5 PROBLEMS, NEEDS, AND OPPORTUNITIES

The key problems being addressed in this study are related to navigation needs and opportunities in the manufacturing of deepwater petroleum facilities. This study focused on examining opportunities to alleviate the problems stemming from the shallow depth of water access to and from the Port of Iberia by improving navigation access, thereby enabling the existing Port of Iberia infrastructure (industry and skilled labor) to continue to support the national energy and development needs.

1.5.1 Deep-Water Exploration

Recent technology has brought oil production into deeper offshore water, which requires larger fabrication units; therefore, companies must have the capability of transporting these larger structures to the Gulf of Mexico. Some of the ports along the Gulf of Mexico that were traditionally leaders in shallow water rig component fabrication and rehabilitation have found themselves shut out of the deepwater market due to insufficient draft in existing navigation channels. The Port of Iberia is one such port. The current shallow depth of water access to and from the Port of Iberia is becoming increasingly inadequate for local industries to compete for and capitalize on the growing deepwater industry. Although the Port of Iberia has facilities, infrastructure, and skilled labor in place for fabricating deepwater topsides, the major producers will not consider bids submitted by Port of Iberia fabricators without a minimum of 20-feet of draft from the port to the Gulf of Mexico.

1.5.2 Environmental Considerations

Other problems in the project area include an eroding bank along the FWB and the GIWW in the study area, and deterioration of surrounding wetlands due to salinity intrusion. The original GIWW authority specified that a maximum width of 125-feet be maintained. However, in many reaches of the GIWW, the banks are now as much as 400 to 600 feet wide. This bank erosion is contributing to the erosion of already deteriorating wetlands, subsidence, and saltwater intrusion.

There is also the need and opportunity to reduce the rate of marsh loss near the Port of Iberia. The current rate of bank line erosion near the GIWW and the FWB is 3.4 feet per year (ft/yr) and 4.9 ft/yr respectively. The current rate of marsh loss in this area is mainly due to erosion caused by wave action on unprotected shorelines. Some loss of internal marsh areas has occurred in the past from development activities and from impoundments associated with local land management practices, but the current loss rate on internal marsh areas is relatively low compared to other areas of south Louisiana.

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CHAPTER 2 ALTERNATIVES

2.1 PLANS ELIMINATED FROM FURTHER STUDY

Several alternatives existed for routing Port of Iberia vessel traffic to the Gulf of Mexico (Coastal Engineering and Environmental Consultants, Inc. 2001 and USACE August 2002). All alternatives used the existing channel, known as the Commercial Canal, and connected with the GIWW. The first alternative was to route vessel traffic west on the GIWW and south through the Vermilion River Cutoff to the Gulf of Mexico. The second alternative was to route the vessel traffic southwest through Vermilion Bay and into the Gulf of Mexico. The third alternative was to route vessel traffic east on the GIWW and south through the Lower Atchafalaya River. Initial investigations that explored the maintenance of navigation channels through Vermilion Bay and the Lower Atchafalaya River revealed that the existence of fluid mud rendered these channels inefficient and, in the case of Vermilion Bay, increased the likelihood of saltwater intrusion. Furthermore, the Lower Atchafalaya River route requires an increased travel distance and would likely cause added transportation delays because of existing structures. Thus, enough information existed to rule out these three alternatives from further study.

2.2 PLANS CONSIDERED IN DETAIL

The fourth alternative, which was carried into the feasibility study phase, involved routing the vessel traffic west on the GIWW and then south on FWB to the Gulf of Mexico. A decision was reached early within the feasibility study process that the only reasonable navigation route, when considering economic and environmental issues, was through the use of approximately 60 miles of existing channels utilizing FWB **(figure EIS 2-1)**.

2.2.1 Rationale for Recommended Plan

In order to comply with the section of the requirements (ER 1105-2-100) that states, “A sufficient number of alternatives must be analyzed to insure that net benefits do not maximize at a scale smaller than the Recommended Plan,” the decision was made to do a detailed analysis of several channel depth variations. The sizes and drafts of deepwater topsides projected to use the port in the future, under various scenarios, were used to formulate channel variations for the FWB Alignment. These variations consisted of channel depths from 16 feet to 20 feet over bottom **(Table EIS 2-1)**. These channel dimensions were all based on the same overall plan, the fourth preliminary alternative (herein after referred to as FWB Alignment).

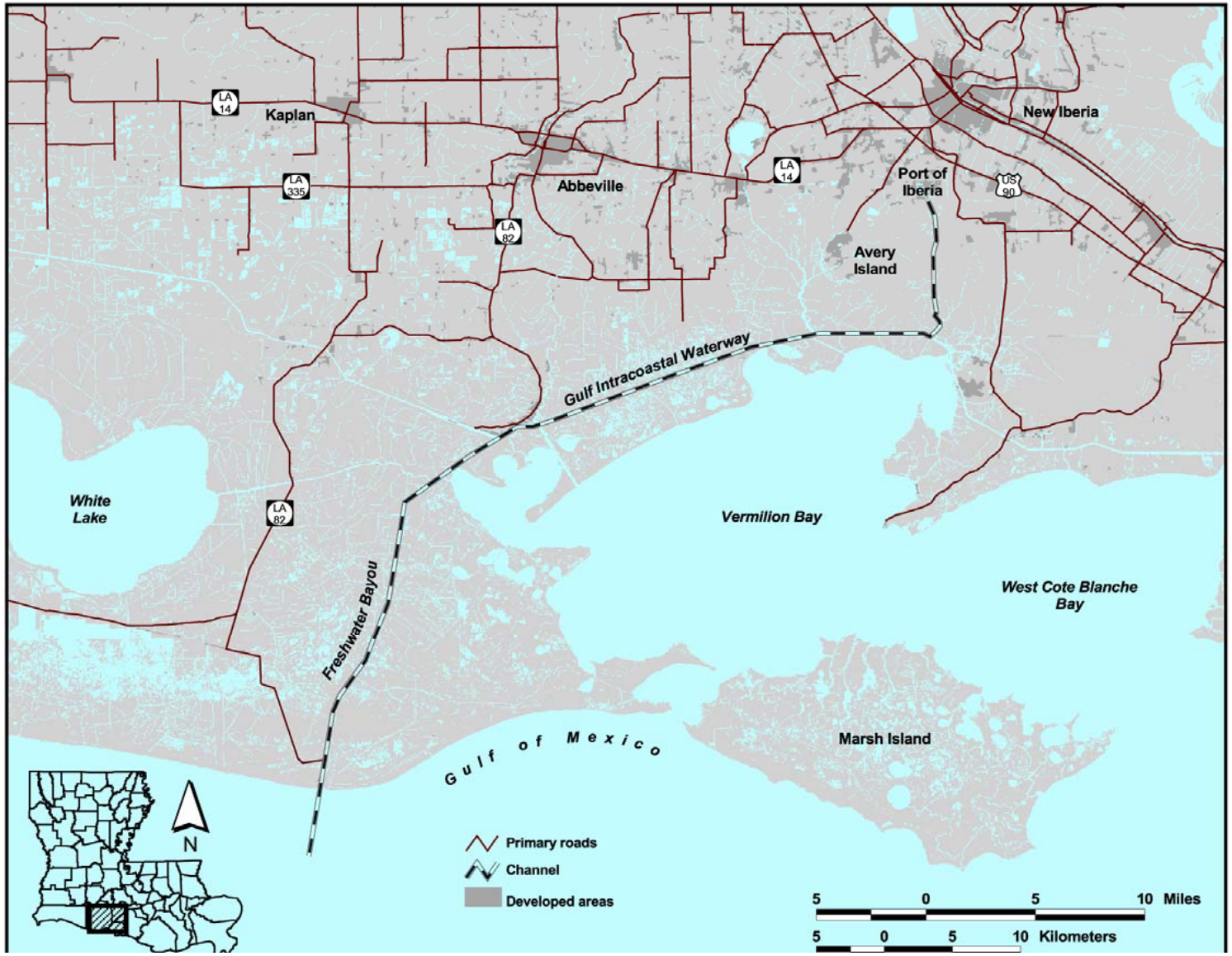

Figure EIS 2-1 Port of Iberia Freshwater Bayou Alignment

Table EIS 2-1
Channel Variations Considered In Detail

Channel Variations	Offshore Channel Depth	Inshore Channel Length	Offshore Channel Length
20-foot	20 feet	244,700 feet	28,000 feet
18-foot	18 feet	244,700 feet	21,000 feet
16-foot	16 feet	244,700 feet	21,000 feet

A subsequent benefits survey was conducted for each variation and a detailed cost estimate of construction and continuous maintenance was done. Fabricators claiming change of origin benefits stated that any channel depth less than 20 feet would preclude their bidding on deep-water fabrication contracts.

A scenario-based matrix (table MR 4-4 of feasibility report) was used to determine the RP. See the feasibility report section 4.3 for discussion of the rationale for picking the RP. The FWB Alignment with a 20-foot over by depth based on ALDS by 150-foot channel became the RP.

The variation of the FWB Alignment that provides for a 20-foot deep over bottom by a 150-foot wide channel with a least cost, environmentally acceptable dredge material disposal plan was designated as the RP. This is the plan that the non-Federal sponsor identified as the maximum dimensions due to their budget constraints. The RP however, was not designated as the National Economic Development (NED) Plan because no attempted was made to verify this plan as the NED Plan. ER-1105-2-100 22 Apr 2000 3-2b(10) Categorical Exemption to NED Plan, states in part:

> For…channel deepening studies were the non-Federal sponsor has identified constraints on channel depths it is not required to analyze project plans (deeper) than the plan desired by the sponsor…The recommended plan must have greater net benefits than smaller scale plans, and a sufficient numbers of alternatives must be analyzed to insure that net benefits do not maximize at a scale smaller than the recommended plan.... The analysis of alternatives must be comprehensive enough to meet the requirements of NEPA.

The analysis used for this study satisfied all of these requirements for a categorical exemption to NED Plan.

In addition, a National Ecosystem Restoration Plan (NER) was not identified for this study, as the action of deepening human-made waterways does not generally constitute an ecosystem restoration action. Furthermore, the study authorization was limited to navigation only. However, every possible opportunity to use dredge material in a beneficial manner was identified by the resource agencies and was addressed in the plan formulation.

As a result, for purposes of the Environmental Impact Statement (EIS), the only alternatives analyzed in detail were the No Action Plan and the RP.

2.2.2 Description of No Action Plan

With the No Action Plan, it is anticipated that the Commercial Canal would continue to be maintained as a 13 feet deep NGVD (15.58 NAVD88) by 70-150 feet deep channel by the Port of Iberia. The GIWW that and FWB would continue to be Federally maintained at approximately 12 feet MLG (13.8 feet NAVD88) by 125 foot dimensions for the inshore reaches. The offshore reach of FWB would continue to be Federally maintained at approximately 12 feet MLG by 250 feet dimensions.

The GIWW and the inshore reaches of FWB would continue to be self-maintaining. The offshore reach of the FWB would continue to be dredged every 3 years with the material being placed adjacent to the shoreline to the west of the mouth of FWB. The bypass channel associated with the southern end of FWB would continue to remain closed except when it is necessary to allow a structure to bypass the locks. During these events, the bypass would be dredged to allow passage. The locks would continue to be operated in a manner to reduce salinity intrusion as outlined in the "Master Water Control Plan, Mermentau River Basin, Louisiana, June 1988" (USACE 1988).

2.2.3 Description of Recommended Plan

The RP consists of deepening and widening 60 miles of existing channel utilizing the FWB Alignment. The channel dimensions would be -20 feet NAVD88 above FWB lock –21 feet NAVD88 below the lock by 150 feet. Expected volumes of material excavated during construction from the existing 60 miles of channel through FWB would be approximately 14 million cubic yards and would be used beneficially whenever practicable. A determination was made that the disposal of dredge material would be formulated to avoid and minimize environmental impacts and would not be considered environmental enhancements.

2.2.3.1 Dredging and Dredge Material Disposal

Coastal wetland loss in Louisiana is a well-publicized and documented issue and substantial efforts are underway to reduce and reverse the problem. The Coast 2050 effort demonstrates the Federal and state interest in protecting and restoring coastal wetlands in Louisiana. The Coast 2050 effort was authorized through Resolutions of the U.S. House of Representatives and Senate Committees on Public Works, 19 April 1967 and 19 October 1967; the Coastal Wetland Planning, Protection, and Restoration Act (CWPPRA) of 1990 (P.L. 101-646); and Act 6 of the 1989 Louisiana Legislature, Second Extraordinary Session (R.S.49: 213.6).

The majority of the marshes within the project area are healthy in comparison to other basins along coastal Louisiana (Chabreck, R.H. 1982), thus dredge material disposal presents one of the biggest challenges of this study. Placement of material in areas that

were adjacent to the Commercial Canal, GIWW, and FWB channels, as done in the past, was rejected because it is no longer environmentally acceptable to dump dredge material on healthy marsh and create uplands. As a result, in order to avoid and minimize impacts to wetlands as defined by the National Environmental Policy Act (NEPA), dredge material disposal methodologies were formulated with the assistance of Federal and state resource agencies in an effort to identify the least environmentally damaging disposal plan.

Inshore Channel Dredging

During construction of any channel alternative, dredge material excavated from the inshore channel between the southern half of Commercial Canal (**table EIS 2-2**), to the lock on the south end of FWB, would be used to reestablish the bank line of the eroding channels. Any material remaining after completion of bank line reclamation would be used for wetland restoration in broken marsh areas and shallow open water areas identified in **EIS plate 1**. The assumption was made that the marsh areas created in shallow open water areas would revegetate naturally. In the absence of natural revegetation, the CE-MVN would plant these disposal areas, thereby helping marsh vegetation become established as well as impede erosion. The material excavated from the upper portion of Commercial Canal (**table EIS 2-2**) would be placed in a designated 343 acre upland disposal site on the west bank of the Commercial Canal. Another upland disposal area adjacent to the lock and bypass channel would be used to maintain the integrity of the structure.

Table EIS 2-2
Breakpoint for Disposal of Dredge Material on Commercial Canal *(channel variations are in feet)*

Channel Variations (NAVD88)	Station
18 by 125 Channel	140 + 00
20 by 125 Channel	190 + 00
18 by 135 Channel	150 + 00
20 by 135 Channel	195 + 00
16 by 150 Channel	90 + 00
18 by 150 Channel	170 + 00
20 by 150 Channel	210 + 00

Offshore Channel Dredging

The offshore channel would require dredging for initial construction and annually thereafter. In the offshore reaches, the least costly, environmentally acceptable method for disposing of material dredged up to 4 miles from the shoreline would be to dispose of the material in the Gulf of Mexico, immediately adjacent to the shoreline, in order to nourish the beach with new material.

Dredge Material Disposal Methods

The following environmentally acceptable methods for disposal of dredge material would be utilized and prioritized as listed within 80 identified disposal sites **EIS plate 1**:

1) Reestablish some of the eroded bank line to prevent further erosion while decreasing maintenance requirements;
2) Create marsh in shallow open water; nourish broken marsh areas; and
3) Dispose material at the mouth of FWB for beach nourishment.

In addition to the methods described previously for the 80 sites, 4 sites were identified for confined disposal. In these four sites, marsh habitat would be converted to a lower value shrub/scrub habitat. Two of the four sites would be located on the east bank of FWB near the FWB Bypass Lock and the other two would be located along Commercial Canal.

The two sites on the western side of Commercial Canal, which consist of previously impounded fresh marsh, were combined into a 343-acre disposal site, thereby lessening the footprint on the marsh being impacted.

With implementation of the RP, all of these disposal methods would be used.

CHAPTER 3 EXISTING CONDITIONS

3.1 STUDY AREA DESCRIPTION

At present, the GIWW intersects the Commercial Canal, which provides access to the Port of Iberia. The FWB intersects the GIWW to the southwest of the Commercial Canal. The current Federal responsibility is to maintain the GIWW channel with dimensions of approximately 12 feet MLG by 125 feet. The FWB channel is maintained to dimensions of approximately 12 feet MLG by 125 feet for the inshore reach and 12 feet MLG by 250 feet for the offshore reach.

The study area is located in south central Louisiana. The Port of Iberia study area is bounded by the cities of Lafayette and New Iberia, to the north; the Atchafalaya River to the east; the Vermilion River and FWB to the west; and the Weeks Bay/Vermilion Bay complex and the Gulf of Mexico to the south. Major communities in the study area include New Iberia, Lafayette, Jeanerette, Franklin, Abbeville, and numerous smaller communities **(figure EIS 1-1)**.

The study area supports a large commercial and recreational fishing industry. Many species of estuarine-dependent fish and shellfish are found in the area, as well as numerous avian species, including waterfowl, shore birds, sea birds, wading birds, and neotropical migrants.

The Port of Iberia has connections to the Gulf of Mexico; however, the port is primarily landlocked.

The project area includes the Port of Iberia, Commercial Canal, GIWW (Commercial Canal to FWB), and FWB out to the –20-foot NAVD88 contour in the Gulf of Mexico.

3.1.1 Land Characteristics

The study area is situated within the western Gulf Coastal Plain physiographic province along the boundary between the Southwestern Louisiana Chenier Plain and the western most Mississippi River Deltaic Plain. The dominant physical land features include Pleistocene Terrace deposits, natural levees, salt domes, cheniers, beaches, marshes, lakes, bayous, and human-made canals (Chabreck 1972).

Elevations of natural ground range from maximum of 15 feet to 20 feet National Geodetic Vertical Datum (NGVD) (12.42 ft. to 17.42 ft. NAVD88) on the terraces and chenier ridges to a minimum of 1 to 2 feet NGVD (-1.58 ft. to -0.58 ft NAVD88) in the coastal marshes. Streams occurring within the area trend southward and traverse the marsh at intervals of 25 to 30 miles. Natural depths of the streams, lakes, and bays of the study area range from 1 foot to 9 feet. Major salt domes occur within the central and southern reaches of the study area and include Weeks, Jefferson, Avery, and Cote

Blanche Islands. The salt domes have elevations ranging from 40 to 170 feet NGVD (Britsche and Kemp III 1990) (37.42 ft. to 167.42ft. NAVD88).

3.1.2 Climate

The study area has a subtropical marine climate strongly influenced by the water surfaces of many lakes, bays, streams, and the Gulf of Mexico. Prevailing southerly winds increase the marine climate characteristics. During the fall and winter (October through March), the area experiences cold continental air masses which produce frontal passages with thunderstorms and temperature drops. During spring and summer (April through September), the area experiences tropical air masses, which produce a southerly-rising, warm, moist, airflow conducive to thunderstorm development (Muller and Fielding 1987).

The study area is susceptible to hurricanes and tropical storms. These weather systems can cause considerable property and environmental damage. The most recent hurricanes to pass through the study area were Andrew in 1992 and Lily in 2003.

3.2 SIGNIFICANT RESOURCES

A resource is considered significant if it is identified in the laws, regulations, guidelines, or other institutional standards of national, regional, and local public agencies; if it is specifically identified as a concern by local public interests; or if it is judged by the responsible Federal agency to be of sufficient importance to be designated as significant. A summary of the attributes and recognition of the significant resources discussed in this report is displayed in **tables EIS 3-1** and **EIS 3-2** respectively. The sections that follow these tables provide a more detailed discussion of the existing condition of each significant resource found in the study area.

Table EIS 3-1

Attributes of Significant Resources

Resource	Ecological Attributes	Cultural Attributes	Esthetic Attributes
Marshes	Provide nursery grounds for larval and juvenile fishes. Detrital output is a basic element of the food web.	Estuarine-dependent fisheries support traditional extractive economy of coastal Louisiana.	Viewed as essential to a typical Louisiana coastal wetland.
Essential Fish Habitat (EFH)	Provide crucial elements for commercial and recreational fishery production.	Fishery production is crucial to cultural base of Louisiana coastal communities.	N/A
Estuarine Water Bodies	Provide nursery area for estuarine finfish and shellfish.	Fisheries production increases public utilization. Fishing is a valuable part of local heritage. Provide a navigation route.	Esthetically pleasing water bodies surrounded by emergent vegetation provide habitat diversity.
Beaches	Provide foraging, nesting, and resting habitat for shorebirds. Provide foraging, nursery, and staging areas for surf zone fish and crustaceans. Protect marshes from storms.	Provide a remote area for traditional recreational pursuits.	A beach-lined shoreline is a pleasing view.
Gulf Water Bottoms	Provide important substrate for benthic-oriented fisheries.	Primitive and historical cultures harvested oysters, shrimp, and crabs from Gulf of Mexico bottoms.	Gulf of Mexico bottom acts as a protective barrier between offshore Gulf of Mexico and scenic coastal wetlands and shorelines.
Threatened and Endangered Species	Rarity enhances significance of these species.	N/A	Individuals enjoy viewing rare and endangered species.
Esthetics	N/A	A pleasant visual perception is a component of the culture of an area.	Esthetics is important in preserving the natural attributes and resources.
Recreation Resources	The recreational harvest of fish and wildlife is an important ecological component.	Association with outdoors is part of culture of area.	Outdoor recreational activities flourish in areas of high esthetic quality.
Cultural Resources	N/A	Used as indicators of history and previous inhabitants.	Many cultural resources have high esthetic value.
Socio-Economic Resources	N/A	N/A	N/A
Air Quality	Important to human health and the overall quality of life.	Important to human health and the overall quality of life.	Important to human health and the overall quality of life.
Hydrology and Water Quality	Primary and secondary contact recreation, fish and wildlife propagation, shellfish propagation, and drinking water supply.	Water quality directly tied to quality of life within coastal communities.	May or may not be tied to esthetic value.

Table EIS 3-2
Recognition of Significant Resources

Resource	Institutional Recognition	Technical Recognition	Public Recognition
Marshes	Coastal Zone Mgmt. Act of 1972, Estuary Protection Act, Clean Water Act of 1977, EO 11990, EO 11988, and Fish and Wildlife Coordination Act.	Serve as habitat for 14 species of special emphasis (USFWS). Louisiana is losing about 25 square miles of marsh per year from subsidence.	Environmental organizations and the public support the preservation of marshes.
Essential Fish Habitat (EFH)	Magnuson-Stevens Act of 1996, Public Law 104-297	Federal and state agencies recognize the value of EFH.	Public places a high value on seafood and the recreational and commercial opportunities EFH provides.
Estuarine Water Bodies	Clean Water Act of 1977, Fish and Wildlife Coordination Act, Coastal Zone Mgt Act of 1972, La State & Local Coastal Resources Act of 1978	USACE, USFWS, NMFS, NRCS, USEPA, LDWF, and LADNR recognize value of fisheries and good water quality.	Environmental organizations and the public support the preservation of water quality and fishery resources.
Beaches	Coastal Zone Mgmt Act of 1972, Coastal Barrier Resources Act of 1982, and Coastal Barrier Improvement Act of 1990	State and Federal agencies recognize the value of beaches and shore dunes.	Environmental organizations and the public support the preservation of vital habitat such as nesting sites for migratory birds (ex. piping plover).
Gulf Water Bottoms	Fish and Wildlife Coordination Act, Marine Protection, Research, and Sanctuaries Act of 1990	State and Federal agencies recognize the value of Gulf water bottoms for the production of benthic organisms.	Environmental organizations and the public support the preservation of water quality and fishery resources.
Threatened and Endangered Species	Endangered Species Act and Bald Eagle Act	USACE, USFWS, NMFS, NRCS, USEPA, LDWF, and LADNR cooperate to protect these species.	The public supports the preservation of rare or declining species.
Esthetics	USACE ER 1105-2-100, and National Environmental Policy Act	State and Federal agencies recognize the value of beaches and shore dunes.	Environmental organizations and the public support the preservation of natural pleasing vistas.
Recreation Resources	Federal Water Project Recreation Act of 1965 and Land and Water Conservation Fund Act of 1965	Provide high economic value of to local, state, and national economies.	Public makes high demands on recreational areas.
Cultural Resources	National Historic Preservation Act of 1966 and Archeological Resource Protection of 1979	State and Federal agencies document and protect sites.	Preservation groups support protection and enhancement of historical resources.
Socio-Economic Resources	River and Harbor Flood Control Act of 1970 (PL 91-611).	N/A	Social concerns and items affecting area economy are of significant interest to community.
Air Quality	Clean Air Act of 1963, Louisiana Environmental Quality Act of 1983.	State and Federal agencies recognize the status of ambient air quality in relation to the NAAQS.	Virtually all citizens express a desire for clean air.
Hydrology and Water Quality	Clean Water Act of 1977, Fish and Wildlife Coordination Act, Coastal Zone Mgt Act of 1972, and La State & Local Coastal Resources Act of 1978.	USACE, USFWS, NMFS, NRCS, USEPA, LDWF, and LDNR recognize value of fisheries and good water quality.	Environmental organizations and the public support the preservation of water quality and fishery resources.

3.2.1 Marsh

Project-area wetlands along the GIWW receive increasing amounts of freshwater, nutrients, and sediments because of the maturation of the Atchafalaya River delta, occurring to the west of the project area (Gagliano and Beek 1970). Current shoreline erosion rates along the GIWW and the FWB are 3.4 ft/yr and 4.9 ft/yr respectively. The fresh marsh zone is increasing at the expense of intermediate and brackish marsh zones as the area influenced by the riverine water expands. Because of continued freshwater input, habitat quality for freshwater fishes, waterfowl, alligators, and more freshwater-tolerant estuarine species (i.e., Gulf menhaden, white shrimp) is increasing throughout most of this area. However, habitat quantity and quality for species that prefer brackish and saline conditions (i.e., brown shrimp, spotted sea trout, and black drum) are decreasing (CWPPRA: Coast 2050 Appendices E and F 1999).

Most of the land in the study area may be described as brackish and intermediate marsh. Brackish and intermediate marshes in this area have undergone a considerable change in the latter half of the century because of dredge material deposition and impoundment. Marshes adjacent to the Commercial Canal, GIWW, and FWB have been altered by the deposition of material dredged from these waterways. The dredge material deposition areas now support vegetation adapted to higher elevations. Much of the marsh occurring along these waterways remains stable.

The most common vegetation species of fresh marsh include Alligator weed, Common rush, Maiden cane, Swamp knotweed, Pickerelweed, Bull tongue, Cattail, and Giant Cutgrass. The most common vegetation species of intermediate marsh include of wiregrass, deer pea, bull tongue, wild millet, bullwhip, and sawgrass. The most common vegetation species of brackish marsh include Coastal waterhyssop, Dwarf spikesedge, Saltmarsh morning glory, Seashore paspalum, Common reed, Olney bulrush, Saltmarsh bulrush, and Marshhay cordgrass.

Intermediate marshes are high in plant diversity. The species occurring in these marshes are highly productive and well adapted to the dynamic environment existing in the coastal zone (Walker 1973). These marshes serve as sediment traps, storm buffers, wildlife habitats, and estuarine nurseries (Lagna 1975). These and brackish marshes are an important component of any estuarine ecosystem because they have high rates of primary productivity, and provide energy flow and nutrient cycling. Detritus washing from these marshes constitutes one of the primary food sources for estuarine organisms (Walker 1973), many of which are ultimately harvested by man. Louisiana's brackish and intermediate marshes provide some of the most desirable habitat sought by fur animals and waterfowl (Palmisano and Chabreck 1972). Replacement of this natural marsh by an unnatural terrestrial environment or by canals and slips significantly reduces productivity (Day et al. 1973).

One of the most detrimental effects on marshes in Louisiana can be saltwater intrusion. Lower salinity brackish, intermediate, and freshwater marshes, such as those found in the

study area, can be destroyed by high salinity water. The marshes within the study area have remained relatively stable in comparison to other basins along the Louisiana coast. It is likely that the continued freshwater influence from the Atchafalaya River and the Wax Lake Outlet have had the positive effect of suppressing higher salinity waters from inundating the marshes within the project area for extended periods. However, isolated areas of marsh loss can be found within the study area. The most commonly cited reasons for these occurrences are:

- Phenomenon such as
  - Muskrat and nutria "eat-out"
  - Drought conditions causing a condition known as "brown marsh"
  - Storm events pushing higher saline waters into artificially managed Marsh areas, thus allowing higher salinity waters to sit indefinitely on the lower salinity marshes resulting in marsh damage
- Levees, canals, and channels in the marshes
- Global sea level change
- Natural land subsidence even though it relatively slight in this area compared to eastern coastal Louisiana

3.2.2 Essential Fish Habitat

This resource is institutionally significant because of the Magnuson-Stevens Act of 1966 (Public Law 104-297). Essential Fish Habitat (EFH) is technically significant because, as the act states, EFH is "those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity." EFH is publicly significant because of the high value that the public places on recreational and commercial fisheries and the seafood industry.

Detailed information on Federally managed fisheries and their EFH is provided in the 1998 generic amendment of the Fishery Management Plans for the Gulf of Mexico prepared by the Gulf of Mexico Fishery Management Council (GMFMC). The generic amendment was prepared as required by the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA) (P.L. 104-297).

Specific categories of EFH (http://www.gsmfc.org/efh/html) include all estuarine water and substrates (mud, sand, shell, rock, and associated biological communities), including the sub-tidal vegetation (sea grasses and algae) and adjacent inter-tidal vegetation (marshes and mangroves). Most of the project area, unless previously impounded, fits into one of these categories. The GMFMC lists the following Federally managed species or species groups as being potentially found in coastal Louisiana: brown shrimp, white shrimp, red drum, and Spanish mackerel. **Table EIS 3-3** shows where the salinity regimes can be found.

The proposed project is located in an area identified as EFH for post larval, juvenile, and sub-life stages of white shrimp and brown shrimp; post larval, juvenile, and sub-adult red

drum; juvenile, sub-adult, and adult Spanish mackerel; juvenile and sub-adult bluefish; and larval and adult cobia.

EFH requirements vary depending upon species and life stage (**table EIS 3-4**.). Categories of EFH in the project area include estuarine and near-shore marine areas. Estuarine areas include estuarine wetlands, estuarine water column, submerged aquatic vegetation, and estuarine water bottoms. Marine areas include the near-shore (beach) and shelf out to the 4-mile limit offshore of the study area.

Table EIS 3-3
Salinity Regimes for Federally Managed Species *(by life stages)*

Salinity Zone	Life stage	Brown Shrimp	White Shrimp	Red Drum	Spanish Mackerel	Cobia
0 – 0.5 ppt.	Adults		2	2		
	Eggs					
	Juveniles	3 to 5	2 to 3	2		
	Larvae					
	Spawners					
0.5-5 ppt.	Adults	2	2	2 to 3		
	Eggs					
	Juveniles	3 to 5	3 to 4	3	2	
	Larvae					
	Spawners					
5 – 15 ppt.	Adults	2	3	2 to 3		
	Eggs					
	Juveniles	3 to 5	3 to 4	3	2	
	Larvae					
	Spawners					
15 – 25 ppt.	Adults	3 to 4	3 to 4	2 to 3	2	
	Eggs					
	Juveniles	3 to 5	3 to 4	3	2 to 3	
	Larvae					
	Spawners					
>25 ppt.	Adults	3 to 4	3 to 4	3	2 to 3	3 to 5
	Eggs					
	Juveniles	3 to 5	3 to 4	3	2 to 3	3 to 5
	Larvae					3 to 5
	Spawners					

Table EIS 3-4 Essential Fish Habitat *(by life stages)*		
Species	**Life Stage**	**Essential Fish Habitat**
Brown shrimp	Adults	Gulf of Mexico <110 m, Silt sand, muddy sand
	Juvenile	Marsh edge, SAV, tidal creeks, inner marsh
White shrimp	Adults	Gulf of Mexico <33 m, Silt, soft mud
	Juvenile	Marsh edge, SAV, marsh ponds, inner marsh, oyster reefs
Red Drum	Adults	Gulf of Mexico & estuarine mud bottoms, oyster reef
	Juvenile	SAV, estuarine mud bottoms, marsh/water interface
Spanish Mackerel	Adults	Marine pelagic
	Juvenile	Offshore, beach, estuarine
Bluefish	Juvenile	Gulf and estuarine, pelagic
	Post larvae/ Juvenile	Beaches, estuaries, inlets
Cobia	Adult	Coastal and shelf
	Post larvae/ Juvenile	Coastal and shelf

3.2.3 Estuarine Water Bodies

The estuarine water bodies of the study area consist of brackish to saline lakes, bays, ponds, lagoons, canals, bayous, and tidal passes. Salinity of the estuarine waters are primarily affected by the amount of discharge from the Atchafalaya River, wind forcing associated with predominant wind fields, and coastal currents. The salinities in these waters ranges from 0.2 to 35 parts per thousand, with unusually heavy local rainfall and/or high discharges from the Atchafalaya River depressing salinity levels below 5 parts per thousand. The water bottoms are mostly composed of sand, silt, and mud.

Estuarine waters of the study area support many commercially and recreationally important fish and shellfish species. Species include spotted seatrout, sand seatrout, red drum, black drum, southern flounder, menhaden, brown shrimp, white shrimp, and blue crab. Freshwater species found in the study area include catfish, drum, buffalo, gar, carp, bowfin, bass, bluegill, crappie, warmouth, and sunfish. Oysters are harvested to a limited degree within the southern reaches of the study area. Some oyster leases do exist on the south side of Marsh Island, but remain outside of the project area. Weeks Bay has historically been listed as a public oyster seed ground. However, oyster production within Weeks Bay is virtually nonexistent because of lower salinity waters rendering the area less than optimal for oyster production. Estuarine waters within the project area are affected by riverine influences of the Vermilion River from the north, the Atchafalaya River from the east and tidal influences of the Gulf of Mexico to the south.

Water quality in the study area is primarily influenced by riverine influences of the Vermilion River from the north, the Atchafalaya River from the east and tidal influences of the Gulf of Mexico to the south. Tidal action plays a major part in the hydraulic regime, and subsequently, water quality. The Port of Iberia study area is quite large and encompasses many water bodies. The Louisiana Department of Environmental Quality (LDEQ) has designated the primary waters of the Port of Iberia Feasibility Study Area for use as primary contact recreation, secondary contact recreation, propagation of fish and wildlife, and shellfish propagation. Water and sediment samples were collected and analyzed for this study. A description of the sampling procedures and results of lab analysis are presented in appendix B, section 3.

3.2.4 Beaches

The study area contains a small beach/shoreline extending east and west from the mouth of FWB at the Gulf of Mexico. The soils of this beach/shoreline are a mixture of sand, clay, and shell fragments. Beaches and shorelines within the study area are typically long and narrow and continually washed and reworked by wave action, with the higher areas covered by debris washed in during high tides and storm events. This area is used for limited recreational purposes due to accessibility. The portion of the beach eastward of the mouth of FWB is a resting area for the threatened piping plover.

The moderate- to high-salinity waters of the surf zone and nearshore areas provide nursery and foraging habitat for many estuarine-dependent finfish and shellfish species of commercial and recreational importance. Bottom-feeding and shallow-water fish inhabiting the surf zone include bay anchovy, southern flounder, Atlantic stingray, striped mullet, catfish, spot, pinfish, and the immatures of many Gulf of Mexico species, including Gulf menhaden, black drum, red drum, speckled seatrout, sand seatrout, croaker, and mangrove snapper. The young of some offshore sharks, such as the finetooth shark and Atlantic sharpnose shark, use the surf zone and nearby area as nursery habitat.

Shellfish species include blue crab, stone crab, brown shrimp, white shrimp, and seabob shrimp. Benthos in the surf zone and nearshore areas include polychaete worms, nematodes and harpacticoid copepods. Invertebrates at the site include clams, various squids and jellyfish, Portuguese man-of-war, oyster drill, and periwinkles.

3.2.5 Gulf of Mexico Water Bottoms

The water depth in the study area ranges from less than 1 foot to about 20 feet in the Gulf of Mexico at the seaward boundary of the deepest channel variation. Bottom sediments are composed of sand, silt, clay, shell, and organic detritus. The salinity in the study area varies from 5 to 35 parts per thousand due to tides, storms and hurricanes, rainfall, and freshwater discharge. Freshwater input from local rainfall, the Vermilion River and the Atchafalaya River may occasionally create surface salinities considerably lower than bottom salinities. The gulf water bottom provides essential benthic habitat for fishes,

shrimp, and crabs. Shrimp and crabs typically migrate on the bottom during the day and on the surface during the night. Most fish species, which spawn in the near-shore gulf, select bottom habitats where adequate depth and salinity is present.

3.2.6 Threatened/Endangered Species

In accordance with the Endangered Species Act, the USFWS and the National Marine Fisheries Service (NMFS) were contacted to determine if any threatened or endangered species occur in the study area. Threatened and endangered species listed by the USFWS for the study area include black bear, brown pelican, and the piping plover. The jurisdictional NMFS Endangered and Threatened Species list for Louisiana includes the blue whale, finback whale, West Indian Manatee, humpback whale, Sei whale, sperm whale, gulf sturgeon, green sea turtle, hawksbill sea turtle, Kemp's ridley sea turtle, leatherback sea turtle, and loggerhead sea turtle. All species are classified as "Known" occurrence. *Note: The NMFS list is of the Federally protected species under the jurisdiction of NOAA Fisheries and does not include the essential fish habitat consultation pursuant to the Magnuson-Stevens Fishery Conservation and Management Act.*

The threatened piping plover is known to winter along the Louisiana coast. Coastal areas east of the mouth of FWB have been designated by the USFWS as piping plover critical habitat. The proposed project should have virtually no impact on wintering piping plovers or their critical habitat as long as dredge material is disposed on the west side of the mouth of FWB. Any displacement of wintering piping plovers would be temporary because of the significant amount of suitable habitat available in the study area for relocation. As a result, the USFWS concurs with the determination that the proposed work is not likely to adversely affect piping plovers or their critical habitat.

Recent U.S. Army Corps of Engineers—Mississippi Valley Division, New Orleans District (CE-MVN) formal consultation with NMFS with respect to the potential impacts of hopper dredge maintenance operations on endangered and/or threatened sea turtle species, and their critical habitat, resulted in the issuance of a Gulf Regional Biological Opinion (GRBO) on 19 November 2003 for the existing FWB project. An Incidental Take Statement was included in the 2003 GRBO. The use of cutterhead pipeline dredges for maintenance operations was determined not to have significant impacts on sea turtles and/or their critical habitat. A revision of the 2003 GRBO addressing changes to the Reasonable and Prudent Measures was issued on 24 June 2005.

3.2.7 Esthetic Values/Open Space

This resource's institutional significance is derived from laws and policies that affect visual resources, most notably the 1969 National Environmental Policy Act. The 1988 USACE Visual Resources Assessment Procedure provides a technical basis for identifying the RP's significant impacts. Public significance is based on expressed public perceptions and professional analysis of the RP's visual impacts.

From an ecological standpoint, the coastal Deltaic and Chenier Plains have many unique features. The diverse habitats provided by isolated Pleistocene deposits, alluvial ridges, swamps, marshes, cheniers, salt domes, beaches, bays, and near-shore gulf waters support extremely dynamic and productive biotic communities.

In addition to supporting dense populations of many commercially important species, critical habitat for several rare or endangered species is provided. The marshes and bays of the coastal area are responsible for Louisiana being the premier state in annual production of fisheries and fur. This phenomenal productivity is in itself unique because the Louisiana marshes are among the largest and most productive in the world. The brackish and saline marshes serve as prime nursery grounds for over 100 species of estuarine dependent fish and shellfish. The majority of species that are the basis of Louisiana's renowned commercial and sport fishery utilize these marshes during certain phases of their life cycle. Louisiana's wetlands normally winter 5 to 6 million waterfowl and provide nesting habitat for many species of wading and sea birds.

Significant geological features are found in the project area cheniers and beach ridges, which are linear geological features unique to a deltaic coast. They represent ancient gulf beaches that were stranded by deposition of alluvial sediments gulf ward from the former shoreline by deltaic sedimentation. The cheniers lay in parallel belts to the gulf and are composed of sand and shell ridges and dunes deposited by wave action. Cheniers further inland represent the oldest cheniers while those closest to the gulf are youngest. Cheniers were formed by the constant shifting of the Mississippi River across its flood plain.

Salt domes are prominent geological features around which most of the oil and gas drilling in south Louisiana occurs. Most are subsurface in both the coastal marshes and offshore areas. Of the many domes on land in south Louisiana, only the "Five Islands" in Iberia and St. Mary Parishes are truly conspicuous. Four of these islands occur within the coastal zone: Avery Island, Weeks Island, Cote Blanche Island, and Belle Isle. The islands are heavily wooded and have numerous small ponds and lakes. The domes have a distinct flora and fauna quite different from the surrounding marshes. The dominant trees on the well-drained areas of the domes are bitternut hickory, pecan, pignut hickory, southern magnolia, and live oak. The islands are also important wading bird rookeries and habitats for white-tailed deer, small mammals, and occasional black bears.

3.2.8 Recreation

This resource is institutionally significant because of the Federal Water Project Recreation Act of 1965, as amended, and the Land and Water Conservation Fund Act of 1965, as amended. Recreational resources are technically significant because of the high economic value of recreational activities to local, state, and national economies. Recreational resources are publicly significant because of the high value that the public places on fishing, hunting, and boating, as measured by the large number of fishing and hunting licenses sold in Louisiana; and the large per-capita number of recreation boat registrations in Louisiana.

Saltwater recreational fishing in the study area occurs almost exclusively from motorized boats. The physical characteristics of the shoreline, especially the presence of marshland, limit access for shore fishing. It was learned from earlier studies that the vast majority of saltwater recreational boating activity was for fishing, with comparatively little pleasure boating. The high proportion of boating activity for fishing is probably due, in part, to the high quality of the recreational fishery and the unsuitability of the water for pleasure boating. **Table EIS 3-5** shows the number of resident fishing licenses and boat registrations in the primary and secondary parishes of the study area.

In addition, in the project area, consumptive recreation takes the form of waterfowl hunting as evidenced by the number of resident hunting licenses (32,693) and resident duck license permits for this area (17,218). Permanent duck blinds can be seen throughout the marsh area in and around private camps. During the hunting season, portable duck blinds are brought into the area and removed after the season is finished. Deer hunting is prevalent by the large number of deer stands observed during field investigations. **Table EIS 3-5** shows the number of resident hunting licenses in the primary and secondary parishes of the study area.

Table EIS 3-5
Resident Fishing, Hunting, and
Boat Registrations in Primary and Secondary Parishes

	Population (2000 Census)	Resident Fishing License	Resident Saltwater Fishing License	Resident Hunting License	Resident Duck License	Boat Registration
Primary parishes						
Iberia	73,266	9,308	7,581	3,370	1,720	7,393
St. Mary	53,500	10,225	7,976	3,456	1,299	7,650
Vermilion	53,807	10,064	9,338	2,313	3,089	5,452
Secondary parishes						
Acadia	58,861	6,286	3,906	4,904	2,349	3,524
Iberville	33,320	4,397	1,085	1,547	280	3,154
Lafayette	190,503	18,925	13,580	9,762	6,038	13,223
St. Martin	48,583	8,760	2,651	2,961	1,322	4,577
St. Landry	87,700	6,683	1,901	4,380	1,121	5,891
Totals	599,540	74,648	48,018	32,693	17,218	50,864

Non-consumptive recreation is manifested by hiking and biking trails along the coast, numerous state parks and wildlife management areas, as well as opportunities for bird watching and eco-tourism. Located in the project area are Cypremort Point State Park, Marsh Island National Wildlife Refuge, Paul J. Rainey Wildlife Sanctuary, Rockefeller

State Wildlife Refuge, Salt Mines Bird Sanctuary Gardens, Avery Island, Attakapas Island Wildlife Management Area, and numerous other public facilities that allow for both consumptive and non-consumptive outdoor recreation.

3.2.9 Cultural Resources

CE-MVN conducted a cultural resources literature search and sample survey of the project area in 2004 (Lee et al. 2004). Thirty-two prehistoric sites were identified within a 10 percent sample of selected project areas totaling approximately 700 acres. Researchers analyzed sample survey results, developed a predictive model that identified additional project areas exhibiting high probability for cultural resources, and prepared recommendations for additional cultural resources investigations. CE-MVN plans to conduct these additional cultural resource investigations in the pre-construction engineering and design phase of this project. The State Historic Preservation Officer (SHPO) has been asked to comment on the draft cultural resources report prepared by CE-MVN and coordination with the SHPO is ongoing.

The reader may wish to refer to the summary provided in the cultural resources section of appendix B for additional information. Detailed information regarding the history and prehistory of the project area and specific recommendations for further cultural resource investigations can be found in Godzinski's 2004 draft report, which is available upon request from the CE-MVN office and is on file at the Louisiana Division of Archaeology in Baton Rouge.

3.2.10 Socio-Economic Resources

3.2.10.1 Business and Industrial Activity

The majority of the business and industrial activity at the Port of Iberia is related to the petroleum industry in the Gulf of Mexico and coastal waters. The major offshore petroleum support sectors located at the Port of Iberia include fabrication, repair, and service. Business associated with the Port of Iberia employ workers from a seven-parish area including St. Landry, Acadia, Lafayette, St, Martin, Vermilion, Iberia, and St. Mary Parishes. Many of the businesses in the nearby communities are either directly or indirectly associated with the petroleum industry.

3.2.10.2 Employment

Iberia Parish is more heavily dependent on the petroleum industry as a source of employment than are most other parishes in Louisiana. During the mid-1980s, a downturn in the petroleum industry activity contributed to increased unemployment in Iberia Parish. From early in 1992, the petroleum industry has begun to slowly recover, but has experienced cycles of active and inactive periods.

3.2.10.3 Property Values

The project area is uninhabited except around the Port of Iberia. Some hunting and fishing camps are located along bayou and canals in the marsh areas. Most of the land is wetlands and dredge material disposal sites. Business space at the Port of Iberia is available but limited. Agricultural land is in close proximity and may be utilized for port business expansion. Some rural homesteads are present near the Port of Iberia. Previous port expansion has raised property values over undeveloped land.

3.2.10.4 Land Use

Land use of the study area is limited to the general vicinity of the Port of Iberia and Intracoastal City. The majority of the project area is wetlands and dredge material disposal sites. The Port of Iberia is highly industrialized and surrounded by mostly agricultural land with some rural homesteads. Intracoastal City is highly industrialized with limited agriculture.

3.2.10.5 Farms

The study area contains farmland and agricultural activity along the northern reaches of the Commercial Canal, near FWB, and throughout Vermilion Parish. Certain upland agricultural tracts are being investigated as potential disposal sites. Under the Natural Resources Conservation Service (NRCS) Farmland Protection Policy Act: Form 1006, a determination of prime and unique farmland will be conducted through the Iberia Parish and Vermilion Parish NRCS units upon completion of the 404(b)(1) process.

FWB forms the easternmost boundary of the Mermentau Basin located in Vermilion Parish. Vermilion Parish contains the highest rice acreage in the state of Louisiana, which approaches 100,000 acres annually. Sugar cane farming also contributes to the local economy with approximately 4,000 acres of sugar plantations. Cattle ranching is prevalent throughout Vermilion Parish and encompasses approximately 120,000 acres of grazing lands. About 65 percent of the land used for cattle production is located south of Highway 335 and is subject to saltwater intrusion.

3.2.10.6 Public/Community Facilities and Services

Services available to the businesses at the Port of Iberia include municipal water, electricity, garbage pickup, and police protection. Individual sewerage treatment plants are utilized by the businesses at the port. Community facilities located in the study area include a public marina, boat launch, and docks at the Port of Iberia.

3.2.10.7 Tax Revenue

The businesses and their employees operating at the Port of Iberia generate tax revenues.

3.2.10.8 Population/Displacement of People

A few rural homesteads are located in the general vicinity of the Port of Iberia. A large percentage of people living in nearby communities work directly or indirectly for businesses associated with the petroleum industry. Since the slump in the petroleum industry in the mid-1980s, skilled workers have left south Louisiana due to the lack of jobs. Most communities experienced a decline in population. During the late 1990s and early 2000s, the petroleum industry relatively stabilized and populations have slightly increased.

3.2.10.9 Community and Regional Growth

Along with the other parishes of south Louisiana, Iberia Parish benefited from the rapid growth of the petroleum industry in the 1970s and 1980s. After the mid 1980s, Iberia Parish went through a recession due to a major slump in the petroleum industry. The study area had the infrastructure necessary for significant short-term diversification through tourism and other similar activities. With the relative stabilization of the petroleum industry and diversification, the study area continues to experience growth.

3.2.10.10 Community Cohesion

The communities of south central Louisiana exhibit a lifestyle unique in its origin. The local economies have similar reliance on the agriculture and mining sectors and represent approximately the same level of economic and social development.

3.2.11 Air Quality

The Clean Air Act of 1970, as last amended in 1990, required the Environmental Protection Agency (EPA) to establish the National Ambient Air Quality Standards (NAAQS). Primary standards set limits of air quality that are necessary to protect public health, including the health of sensitive populations such as asthmatics, children, and the elderly. Secondary standards set limits to protect public welfare, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings. The NAAQS pollutants monitored in Louisiana by the LDEQ include ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, total suspended particulate, particular matter less than 10 microns, and lead. The majority of monitoring stations in Louisiana are located along the Mississippi River Corridor. The nearest monitoring stations to the study area are in Lafayette, Louisiana and Morgan City, Louisiana. The Lafayette station is classified as a Special Purpose Air Monitoring Station (SPMS) and the Morgan City station as a State and Local Air Monitoring Station (SLAM), both for monitoring ozone levels. The study area and the project area are in full compliance for the one-hour ozone standard.

Emissions from equipment, trucks, vessels, and activities of the major offshore petroleum support sectors of fabrication, repair, and service associated with the businesses of the

Port of Iberia are likely the primary source effecting air quality. No calculations have been performed for this report to estimate the quantities of air pollutants generated by business activities at the port.

3.2.12 Hydrology and Water Quality

The Louisiana Water Quality Inventory (LAWQI) is the method used by the Louisiana Department of Environmental Quality (LDEQ) to determine levels of support for various aquatic uses. The major uses include primary and secondary recreational contact, fish and wildlife propagation, drinking water supply, agriculture, and shellfish propagation. In general, the water quality of the study area was "fully supporting" most uses. However, fish and wildlife propagation, in particular, was identified as "not supporting." Suspected impairments include low dissolved oxygen from non-irrigated crop production and natural conditions, carbofuran (- a pesticide from irrigated and non-irrigated crop production), and mercury from atmospheric deposition and unknown sources. "Partial support" was identified in some waterway segments of the study area. The main use affected by this determination was fish and wildlife propagation. Suspected impairments include cadmium, copper, lead, metals, and mercury from unknown sources and atmospheric deposition. For the period of 1995-1999, the East and West Cote Blanche Bays were determined to be "not supporting" shellfish propagation due to fecal coliform counts. However, in 2002, the bays were determined to be fully supporting.

The U.S. Environmental Protection Agency (USEPA) uses the Index of Watershed Indicators (IWI) for classification of a watershed. The Port of Iberia project area lies within the Teche/Vermilion Watershed. The Teche/Vermilion Watershed was classified as a "more serious problem – high vulnerability." Condition Indicators such as designed use (recreation), fish and wildlife consumption, and ambient water quality data (conventional pollutants) were ranked "more serious." Vulnerability Indicators such as Aquatic Species Risk, Agricultural Runoff, and Estuarine Pollution Susceptibility were ranked "high."

The LAWQI data reflects the USEPA IWI findings. However, "not supporting" ratings were more predominant in the upper reaches of the two watersheds, with "fully supporting" ratings more predominant in the study and project areas.

3.2.12.1 Sediment

A Tier I Evaluation was performed to investigate potential sources of contamination in the project area. Potential sources of contaminants in the Commercial Canal, the GIWW, and FWB include permitted discharges into the waterway under the Louisiana Pollutant Discharge Elimination System (LPDES) permits, municipal industrial, and residential waste point source discharges, urban runoff, storm sewer system discharges and industrial traffic discharges.

Existing water quality data was researched from USACE sites as well as other agencies such as the USEPA the United States Geological Survey (USGS). Based on limited

existing water quality data and the location of the project with respect to industry, it was recommended that testing be performed to characterize any contaminants in the sediment, water, and elutriate and to determine the effects of such contaminant release upon the water quality because of dredging and construction operations. The Sampling and Analysis Plan is contained in appendix C.

Water samples from sites 1 through 7 were compared to LDEQ criteria for freshwater, whereas data from sites 8, 9, and 10 were compared to LDEQ marine water criteria because of their proximity to the gulf and their salinity readings. Field readings at the 10 USACE sites sampled in March 2003 showed no exceedences to pH, dissolved oxygen (DO), or temperature. Water samples from the 10 sites analyzed by Anacon showed small amounts of metals present. At most sites Arsenic, barium, copper, lead, nickel, and zinc were detected. However, the levels of these metals were all well below the state's criterion. The only metal that might exceed chronic criterion was mercury. Mercury was undetected, however its concentrations at all 10 sites were known to be less than the reported method detection limit of 0.2 ug/L, and therefore could possibly be greater than the LDEQ chronic criterion for mercury, which is 0.012 ug/L for fresh water and 0.025 ug/L, for marine water.

PCBs and pesticides were undetected at all 10 sites. However, a few of the constituents had concentrations that were known to be less than their reported detection limits and could possibly exceed the state's criteria. Endrin, whose reported limit was <0.10ug/L, possibly exceeded both the chronic and acute criteria for fresh water (0.0375ug/L and 0.0864ug/L, respectively) as well as the chronic and acute criteria for salt water (0.037ug/L and 0.0023ug/L, respectively). Endosulfan, whose reported limit was <0.10ug/L, possibly exceeded just the acute criteria for freshwater (0.0560ug/L) as well as the acute and chronic criteria for salt water (0.034ug/L and 0.0087ug/L, respectively). Heptachlor, whose reported limit was <0.10ug/L, possibly exceeded the acute criteria for fresh water (0.0038ug/L) as well as the acute and chronic criteria for salt water (0.053ug/L and 0.0036ug/L, respectively). Chlordane, whose reported limit was <0.03ug/L, possibly exceeded both acute criteria for freshwater (0.0043ug/L) as well as the acute and chronic criteria for salt water (0.09ug/L and 0.004ug/L, respectively). Toxaphene, whose reported limit was <0.5ug/L, possibly exceeded the chronic criteria for both freshwater and salt water (0.0002ug/L and 0.0002ug/L, respectively).

Limited existing water quality data was available from two other USACE sites, POI4 and POI6. POI4 is located on the GIWW and POI6 is located on FWB. Hourly readings of salinity, DO, pH, temperature, and TDS were taken from 2/8/2003 to 3/7/2003 at these two sites. There were no exceedences at these two sites. Salinity readings at POI4 were all less than 2700 mg/l or 2.7 parts per thousand (ppt), indicative of brackish waters. The salinity at POI6 was higher with the highest recorded salinity reading at 7,750 mg/l or 7.75 ppt indicating moderately saline waters. This can be attributed to the station's location along FWB, near the Gulf of Mexico.

Three other stations maintained by the USACE were in the study area. However, water quality data from these stations is extremely limited. The first, Intracoastal Waterway at Leland Bowman Lock (76800) had temperature and salinity readings from 1993 to 2003.

These levels were acceptable, only a few temperature readings exceeded 32 degrees Celsius in the summer. The salinity readings primarily fell within the brackish range with a few readings indicating moderately saline waters.

The second station is FWB Canal at FWB lock (76592). This station had temperature and salinity readings taken sporadically from 1993 to 2002. There were only two instances of temperatures higher than 32 degrees in August and early September. Salinity values varied with 6 percent of the readings indicating brackish water, 83 percent moderately saline water, and 10 percent severely saline water.

The third existing station is located at Schooner Bayou (Inland Waterway) at Control Structure (76680). This station also had sporadic salinity and temperature readings from 1993-2002. There were no exceedences in temperature readings and the salinities were as follows: 80 percent of the readings indicated brackish water, 6 percent moderately saline water, 7 percent severely saline water, and 5 percent seawater.

Ambient water quality data was available from the LDEQ at two sites along Commercial Canal. The sites were named New Iberia Southern Drainage Canal near Intracoastal Waterway, sites (0683) and (0684). Site 0683 is located at the intersection of Commercial Canal and the GIWW. Site 0684 is north of 0683, on Commercial Canal. Monthly readings were taken from June 1998 to December 1998. Parameters tested included temperature, pH, DO, and some basic metals. Site 0683 had two low DO readings (3.56 and 3.81 mg/l), which were lower than the state's criterion for DO of 4.0 mg/l, minimum. There were no exceedences for any other tested parameters. Site 0684 had one low DO reading (3.25 mg/l). There were no other exceedences for any other tested parameters.

Salinities in the area are generally low. Salinities at Cypremort Point (USGS Station Number 07387040) in the eastern portion of Vermilion Bay rarely exceed 4.0 ppt. In the western portion of the bay, salinities rarely exceed 10.0 ppt at USGS Station Number 07387050. No long-term salinity monitoring stations are located along the affected waterways. However, during this study, two short-term salinity stations were deployed in the study area. One of these stations was located on the GIWW near its intersection with the Vermilion River. At this location, salinities ranged from a high of about 4 ppt to a low near 0 ppt. Salinities at this station (on FWB near Fearman's Bayou) never exceeded 4 ppt and they were usually below 1 ppt. Salinities reached highs of about 6 ppt, but dropped to below 1 ppt during the spring flood.

Salinities in this western portion of the study area are largely influenced by flood and drought, and by the yearly hydrograph of the Vermilion River. Salinities are low in the spring, higher in winter and vary between these two extremes. Tidal variations also have some effect upon salinities in the area. Unless there is a drought, there is usually sufficient freshwater flowing into the basin through the Vermilion River to keep salinities in check. Schooner Bayou Control Structure and Leland Bowman Lock are often used to drain the Mermentau Basin project, adding freshwater to the system. With the exception of drought years, salinities do not get excessively high in this area.

Sediment was tested from all 10 March 2003 sites and analyzed by Anacon. Low levels of the metals arsenic, chromium, copper, lead, nickel, and zinc were detected at most of the sites. However, the FDEPs threshold effects level (TEL) benchmark was the only benchmark exceeded and it was only exceeded four times. These exceedences were:

Metal	Data Result	TEL	Site number
Arsenic	7.71 mg/kg	7.24 mg/kg	4
Lead	35.8 mg/kg	30.2 mg/kg	7
Copper	23.3 mg/kg	18.7 mg/kg	10
Nickel	23.4 mg/kg	15.9	10

PCBs and pesticides were mainly undetected with only a few isolated detections of fluoranthene, chrysene, and Bis (2-ethylhexyl) phthalate. However, there was only one exceedence to the sediment quality benchmarks. This was:

Organics			
Bis(2-Ethylhexyl)phthalate	183 ug/kg	182 ug/kg	1

Grain size distribution tests were performed on samples from all 10 sites. The results were as follows:

Site Number	Percent Gravel	Percent Sand	Percent Silt	Percent Clay
1	0	12.3	51.8	35.9
2	0	20.4	64.9	14.7
3	0	5.9	20.7	73.4
4	0	7.5	73.7	18.8
5	0	6.8	65.6	24.9
6	0.7	26	48.3	25
7	0	22.4	51.6	26
8	0	15.9	51.2	32.9
9	0.4	15.8	51	32.8
10	0.1	37.4	3.6	66.1

Results conclude the following: Sediments in Commercial Canal are primarily silt with clay and some sand. Sediments in the GIWW are primarily silt as well with a good amount of clay and some sand. Sediments in FWB are somewhat different however, with good amounts of sand and clay closer to the Gulf of Mexico, and not as much silt. The variation can be attributed to the proximity of FWB to the Gulf of Mexico. As contaminants are more likely to adhere to clay particles than to silt or sand, it would be expected that the sites with higher clay percentages would have more pollutants. This may be indicative of the exceedences of copper and nickel at site 10 from our sediment data. Site 10 had the second highest amount of clays (66 percent). However, site 3 had the most clay (73.4 percent) yet there were no recorded exceedences of contaminants at site 3.

The results elutriate testing were compared to the LDEQ water quality standards and criteria. Some constituents did show an increase in levels from their water sample at the same station. However, results of the elutriate tests showed no exceedences for any of the tested parameters with the exception of mercury, endrin, endosulfan, heptachlor, chlordane, and toxaphene. These constituents had concentrations that were known to be less than their reported detection limits and could possibly exceed the state's criteria. Endrin, whose reported limit was <0.10ug/L, possibly exceeded both the chronic and acute criteria for freshwater (0.0375ug/L and 0.0864ug/L, respectively) as well as the chronic and acute criteria for saltwater (0.037ug/L and 0.0023ug/L, respectively). Endosulfan, whose reported limit was <0.10ug/L, possibly exceeded the acute criteria for freshwater (0.0560ug/L) as well as the acute and chronic criteria for saltwater (0.034ug/L and 0.0087ug/L, respectively). Heptachlor, whose reported limit was <0.10ug/L, possibly exceeded both acute criteria for freshwater (0.0038ug/L) as well as the acute and chronic criteria for saltwater (0.053ug/L and 0.0036ug/L, respectively). Chlordane, whose reported limit was <0.03ug/L, possibly exceeded both acute criteria for freshwater (0.0043ug/L) as well as the acute and chronic criteria for saltwater (0.09ug/L and 0.004ug/L, respectively). Toxaphene, whose reported limit was <0.5ug/L, possibly exceeded the chronic criteria for both freshwater and saltwater (0.0002ug/L and 0.0002ug/L, respectively).

The 404(b)(1) evaluation can be found in the Environmental Appendix B Section 5.

CHAPTER 4 COMPARATIVE IMPACTS OF ALTERNATIVES

A summary of the comparative impacts of the No Action Plan and the RP to the significant resources is contained in **table EIS 4-1**. The sections that follow this table provide a more detailed discussion of these impacts.

Table EIS 4-1
Comparative Impacts

Resource	Existing Conditions	No Action Plan	Recommended Plan
Marsh	Conversion of marsh to open water is occurring primarily from erosion of bank lines, minor subsidence in some areas, and sea-level change.	Several CWPPRA existing projects would protect some of the marshes along the GIWW and FWB with foreshore dikes and terracing projects in Little Vermilion Bay and Little White Lake.	This alternative would build about 4,125 acres of marsh and destroy about 461 acres of marsh over the 50-year project life.
Essential Fish Habitat (EFH)	The proposed project is located in an area identified as EFH.	In the long-term, there could be a minor impact to EFH as the marsh-open water interface could begin to degrade in this region of coastal Louisiana.	The preliminary finding is that the proposed project may result in primarily temporary and some permanent adverse impacts on some habitats designated as EFH for some life stages of Federally managed fisheries species.
Estuarine Water bodies	Important fish species rely on these water bodies for spawning, nursery habitat, and food supply	Continued loss of marsh to open water would eventually cause a reduction in nursery habitat for fisheries.	Creation of marsh in open water would be beneficial wildlife and fisheries resources.
Beaches	Beaches provide recreation and protect brackish and saline marshes. Erosion of beaches can be a serious problem because of certain climatological events. Surf zone provides habitat for estuarine and marine fish species.	The beach area would continue to shift during certain climatological events. CE-MVN would continue to dispose of material during maintenance of the existing channel near the beach. No adverse impact to estuarine and marine fish species.	Material dredged from station 850 of FWB to the 18- foot contour would be placed in the gulf near the shoreline to reduce erosion along beaches on the west side of the channel. Minor burial impacts causing temporary displacement of fisheries and benthic communities in the surf zone.
Gulf of Mexico Water bottoms	Variable depths and bottom conditions support various life stages of fish and shellfish.	Current dredging and disposal operations by CE-MVN would continue to disrupt near-shore benthic habitat in offshore reach.	Occasional dredging of offshore reach would disrupt benthic habitat in offshore channel.
Threatened and Endangered Species	Sea turtles may occur within the project area. Commercial Canal runs through occupied Black Bear Habitat. Brown Pelicans, Piping plovers, and other wading birds utilize habitats within the project area.	Continued marsh loss would reduce or threaten existing habitat for listed species.	There would be no significant adverse impacts to listed species. Marsh creation and erosion control would preserve habitat for some species.

Esthetic Open Spaces	Project area encompasses a variety of habitats.	Erosion would continue to reduce the visual marsh, thereby producing more water. Esthetic conditions would diminish accordingly.	Marsh would be created and beaches would be maintained through placement of dredge material. Marsh grasses and associated plants would colonize these areas, thus increasing overall esthetics.
Recreation	Recreation activities taking place in the study area consist of boating, fishing, hunting, crabbing, and bird watching. Beach use includes fishing.	Recreational use of the area would continue, as it exists now, although it may diminish over the long-term from erosion of marshes.	Dredge material would be used to protect beaches and create marsh acreage to help maintain recreational needs.
Cultural	Over 30 previously recorded cultural resource sites in the project area are being impacted by erosion and oil and gas exploration activities.	Continued erosion coupled with other development activities would further destroy sites.	Known sites located along the channels and marsh bank lines would likely be stabilized and protected through placement of dredge material. Additional cultural resource investigations would be conducted in remaining high probability areas.
Socio-economic	The economy of the area is highly dependent on oil and gas production, agriculture, and commercial fishing. Public facilities and services are typical of rural communities.	No major changes anticipated.	Would either not be affected or would be slightly to moderately affected in a positive manner.
Air Quality	Air quality in the area is good. Businesses at the Port of Iberia do not emit large quantities of pollutants.	No significant change expected.	Air pollution levels would not be raised significantly.
Hydrology and Water Quality	In general, the water quality of the study area was "fully supporting" most uses.	Projected water quality for the study area would be expected to remain similar to current conditions.	The effects of construction due to dredging and disposal areas may include (but are not limited to) typical short-term and long-term effects.

4.1 MARSH

Wetland Value Assessments (WVAs) were used to determine the environmental effects of all dredge material placement. The WVAs provide a method for calculating Average Annual Habitat Units (AAHUs) and assigning a value to each acre of a specific habitat type impacted. A comparison of impacts by habitat type is contained in **table EIS 4-2**. The WVA evaluation is a numerical model containing six variables populated by specific field data. The WVA then calculates and provides an AAHU value for the particular habitat model used.

Table EIS 4-2
Impact Comparisons by Habitat Type

Habitat Types	Existing Conditions		No Action *TY – 50		Recommended Plan *TY – 50	
	Acres	HUs	Acres	AAHUs	Acres	AAHUs
Fresh Marsh	46	69.51	46	173.78	131	281.81
Intermediate Marsh	1247	1310.28	74	2450.8	2618	6578.09
Brackish Marsh	301	269.23	0	497.74	445	976.2
Marsh converted to upland	501	279.62	501	274.99	501	85.93
Shallow Open Water	239	541.34	383	1793.44	1324	3197.55
Other	2685	0#	4015	0#	0	0#
Total	5019	2470	5019	5191	5019	11120

**TY= Target Year*
 # WVA does not assign value to channel bottom and deepwater bay habitat

4.1.1 No Action Plan

Marshes of the study area would likely remain relatively stable in comparison to eastern portions of the Louisiana coastline. However, isolated areas of marsh degradation would continue to occur due to natural and human-induced causes. Erosion along shorelines of the major canals and bays would cause continued loss of the perimeters of adjacent marshes. Some erosion of the gulf shoreline would continue to cause loss of marsh landward of the shoreline. In addition, some amounts of inshore marshes would be eroded by windblown waves. This loss of marsh would eventually have adverse impacts on fish and wildlife species of the study area.

It is predicted that the Port of Iberia would continue to dredge the Commercial Canal and the port area in the absence of Federal action. Federal maintenance of the GIWW and FWB would continue, as needed, to the current dimensions of 12 feet MLG by 125-feet for the inshore channel reaches and 12 feet MLG by 250-feet in the offshore reach. The lock and bypass structures located on the southern end of FWB would continue to be operated as authorized. The Port of Iberia's current Section 404 and Coastal Zone Use Permits (WC-19-990-2265) require that dredge material be placed in designated disposal areas in Weeks Bay and several oil and gas canals along the Commercial Canal.

4.1.2 Recommended Plan

Direct impacts to the marsh resources would primarily result from those project-related activities that would directly create, disturb, destroy, or otherwise harm existing marsh resources. Direct impacts from installation of structural measures (e.g. locks and rock protection) or placement of dredge material on marsh habitat would occur only where existing marsh within the direct footprint of the construction work is disturbed, destroyed, or otherwise harmed. The lock would continue to be operated with the primary objective of controlling salinity intrusion and the bypass channel would remain closed until a

structure needed to bypass the lock. During these events, the bypass channel structures would operate in a manner to minimize salinity intrusion as much as practicable.

Construction of the proposed channel deepening of the GIWW and FWB segments of the RP would require the removal of approximately 14 million cubic yards of dredge material to be used beneficially. Another 2,407,000 cubic yards of material would be placed in a freshwater marsh area, which would then be converted to an upland confined disposal area. Four disposal methods were analyzed-bank line reclamation, marsh creation/nourishment, near-shore shallow water disposal, and confined upland disposal. Bank line reclamation disposal sites consist of shoreline reclamation and stabilization along the GIWW and FWB. Marsh creation/nourishment disposal sites consisted of open water in bays and degraded marsh areas. Near-shore shallow water disposal consists of placing the material adjacent to the existing beach within the intertidal zone to allow the material to be worked in a semi-natural process to prevent further erosion along the Louisiana coastline by continually nourishing the marshes within the vicinity of the disposal. Three disposal sites were designated for confined disposal in cases where no practicable alternative existed to use the material beneficially.

Construction for the proposed channel deepening of the Commercial Canal would require the removal of approximately 1,400,000 cubic yards of dredge material to be used beneficially and the remaining 1,850,000 cubic yard of material would be placed in a contained upland disposal site. A 343-acre tract of fresh marsh adjacent to Commercial Canal would be used for upland disposal for the northern reaches of the Commercial Canal while material from the southern reach would be used to create 220 acres of marsh in the Weeks Bay area. The assumption was made that the confined upland disposal site would receive a minimal amount of credit as a poor quality bottomland hardwood site in the WVA analysis due to the need to reuse the site during subsequent maintenance events during the 50-year period of analysis. The existing dredge material embankment (locally known as spoil bank) along commercial canal were considered for upland disposal but were eliminated from further study as a result of a recent designation as occupied Louisiana black bear habitat.

Bank line reclamation sites would consist of the north and south banks of the GIWW and the east and west banks of FWB. A total of approximately 1,347 acres of marsh would be created in the bank line reclamation sites. A breakdown is as follows: GIWW north and south bank approximately 691 acres and FWB east and west bank approximately 656 acres. Marsh creation/nourishment sites along the GIWW would create or nourish approximately 642 acres and approximately 2,132 acres would be created along the FWB reach. The total acres of marsh created beneficially would be approximately 4,121 acres of which 3,389 acres would be credited to the Port of Iberia Project. The previously authorized CWPPRA projects would have created 732 acres of marsh, which would not be credited to this project.

Another 557,000 cubic yards of material would be excavated from the deepening of the existing bypass channel and would be placed in two sites adjacent to the existing bypass channel. The eastern perimeter of the bypass channel is currently used as an upland

disposal site for previous maintenance events and is approximately 19.4 acres. A 98.5 acre confined disposal site exists immediately adjacent to the channel, but has not been used for many years. This site presently functions as intermediate marsh under forced drainage. This site would be maintained as upland disposal area throughout the 50-year project life in order to impede higher saline waters from undermining the existing bank lines during storm events. No WVA credit was given to this site.

None of the material dredged during construction or maintenance of the offshore reaches would be used directly for marsh creation/nourishment. Rather, material from these reaches would be deposited in the Gulf of Mexico, immediately adjacent to the gulf shoreline, in order to reduce the rate of shoreline erosion as well as protect and preserve the marshes immediately landward of the shoreline. The dredging cycle was estimated at 3-year intervals and anticipates 2.3 million cubic yards per maintenance event.

4.1.2.1 Environmental Planning

With the RP, much of the direct impacts to project-area marshes would be avoided by the creation of intertidal emergent marsh habitat in shallow, turbid, open water disposal areas located within the original bank lines of the GIWW and FWB, and the Vermilion and Little Vermilion Bays. Furthermore, the armoring of much of the reestablished bank lines with rock would reduce or halt shoreline erosion and the settling of that material within the channels, thus reducing or eliminating future maintenance events along the GIWW and FWB. If five-year post-construction disposal elevations that exceed +1.4 feet NAVD88 should be graded to marsh elevation except for the higher channel side berms behind the rock in the bank line disposal areas. If maintenance dredging would be necessary along those channels, the HET would be consulted and the dredge material would be used beneficially within the existing disposal sites or if necessary in other open water sites.

If implemented, the RP would avoid much of the possible indirect impacts of altered hydrology (i.e., stacking dredge material so as to impound marsh habitat) by stacking dredge material no higher than 5 foot NAVD88 within the bank lines of the GIWW and FWB disposal areas. Placement of “fish dips” or gaps in the rock dike would be coordinated with the HET, but generally would be installed in front of tidal creeks and marsh openings along the reestablished bank line and open water bay disposal areas. The “fish dips” should be a minimum of 20-feet wide, have a minimum depth of 0-feet NAVD88, and have a rock on the sides and bottom. This should allow for adequate water exchange as-well-as ingress and egress of fish and shellfish between marshes and open water.

A total of 84 possible dredge material disposal sites were identified of which 4 would be confined disposal converting marsh habitat to a lower value shrub/scrub habitat. Two would be located on the east bank of FWB near the FWB Bypass Lock and the other two would be located along Commercial Canal. No mitigation would be required.

The two sites on the east bank, near the FWB Bypass Lock consist of intermediate marsh (50.5 Average Annual Habitat Units, AAHUs). Based on the AAHUs gained by created marsh (50.7 AAHUs), 98 acres of marsh would be created to provide full compensation for project related impacts to intermediate marsh habitat **(table EIS 4-3**, **EIS plate 1)**.

The two sites on the western side of Commercial Canal consist of previously impounded fresh marsh. After consulting with the habitat evaluation team (HET), a decision was made to combine the two disposal areas, thereby lessening the footprint on the marsh being impacted. The resulting disposal area is a 343-acre site on the western bank, which would be converted from impounded fresh marsh to scrub-shrub habitat. Based on the AAHU of the existing marsh (138.5 AAHUs), the proposed creation of 100 acres of impounded fresh marsh (108 AAHUs) and 31 acres of unimpounded intermediate marsh (31 AAHUs) would provide full compensation for project impacts to the 343 acres of impounded fresh marsh **(table EIS 4-4**, **EIS plate 1)**.

Table EIS 4-3
Marsh Creation Acreage Needed to Offset Impacts to Intermediate Marsh

Marsh Type	**Adversely Impacted Site**			**Marsh Creation Site**		
	Site Number	AAHUs	Acreage	Site Number	AAHUs	Acreage
Impounded Intermediate Marsh (SUD)	Bypass Structure-45&46 (SUD)	-50.5	118			
Un-Impounded Intermediate Marsh				FWB-Open Water-3	50.7	98

Table EIS 4-4
Marsh Creation Acreage Needed to Offset Impacts to Fresh Marsh

Marsh Type	**Adversely Impacted Site**			**Marsh Creation Site**		
	Site Number	AAHUs	Acreage	Site Number	AAHUs	Acreage
Impounded Fresh Marsh	Commercial Canal (SUD)	-138.5	343	GIWW-interior-3	108	100
Un-Impounded Intermediate Marsh				GIWW-BL-18	31	31

4.2 ESSENTIAL FISH HABITAT

4.2.1 No Action Plan

Shoreline erosion and some subsidence would continue to contribute to the loss of wetlands in the project area. Such loss could result in the fragmentation of wetlands along the GIWW and FWB and begin replacing estuarine emergent marsh with open water, mud, and shell bottom substrate. In the long-term, there could be a minor impact to EFH as the marsh-open water interface could begin to degrade in this region of coastal Louisiana. The Gulf of Mexico Fishery Management Council states that EFH for juvenile brown shrimp includes marsh edge, tidal creeks, and inner marsh. EFH for juvenile white shrimp includes marsh edge, marsh ponds, and inner marsh, while EFH for juvenile red drum includes the marsh/water interface. With the loss of marsh and the increase in open water, these specific species would be impacted. There would be a short-term increase in marsh edge. In the long run, there would be a net decrease in emergent wetlands including marsh and marsh edge. The Gulf of Mexico Fishery Management Council also indicates that the surf zone and nearshore habitat are designated as EFH for Spanish mackerel, bluefish, and cobia. These habitats would continue to be impacted during the existing dredge material placement as a result of routine maintenance of the FWB bar channel.

4.2.2 Recommended Plan

Disposal areas resulting from this alternative would provide for protection and creation of existing brackish and intermediate marshes and associated shallow open water areas. Water bottoms, submerged aquatic vegetation (SAV), and some shell substrate would be filled for channel stabilization and to create marsh elevations. This would result in a temporal loss of EFH due to overfilling to allow for settlement and compaction to intertidal marsh elevations within approximately five years of placement. Additionally, the containment for upland confined disposal areas in the fresh marsh would be gapped a minimum of 20 feet wide to 0.0 feet NAVD88 every 1,000 feet or degraded within five years of initial construction. Estuarine fisheries access to existing and created marsh within bays or behind bank line disposal areas would be provided by gaps constructed 25 feet wide (bottom width) to -2 feet NAVD88 no later than five years post construction. Earthen containment dikes for interior disposal areas would be gapped (to 0.0 NAVD88) or degraded within five years of initial construction and fill placement to allow sheet flow and estuarine fisheries access. The creation of wetlands would provide EFH for many Federally managed fisheries and associated life stages. In the long-term, the existing and created marsh would continue to provide EFH for many aquatic species. However, water salinity trends show a freshening of the project area over the 50-year project life with or without the construction of the Port of Iberia project.

The preliminary finding is that the proposed project may result in primarily temporary and some permanent adverse impacts on some habitats designated as EFH for some life stages of Federally managed fisheries species. Disposal of dredge material would create localized and temporary increases in turbidity as sediments are dredged from the channels

and placed in the disposal areas. Short-term local adverse impacts to EFH supportive of federally managed fisheries would occur during construction and maintenance phase of the project. Dredging would remove sediment along with benthic organisms. Impacts to prey species could include entrapment and likely death of slow-moving organisms such as crabs, as well as benthic organisms during dredging. However, overall creation and protection of wetland habitats in the project area should satisfy the objective of essential fish habitat pursuant to the Magnuson-Stevens Fishery Conservation and Management Act. The proposed action would have a long-term and overall net environmental benefit, especially to estuarine emergent wetlands.

4.3 ESTUARINE WATER BODIES

4.3.1 No Action Plan

Productivity of coastal waters located within the project area would likely decline due to the continued loss of coastal wetlands. Shorelines of water bodies would continue to erode into the interior marsh areas, thus creating larger open water areas. Some of this erosion would likely result in the loss of valuable wildlife and fisheries habitat. The CE-MVN would likely continue to maintain the GIWW to a depth of 12 feet MLG and a width of 125 feet. No dredge material maintenance has been needed for the inshore reaches of the GIWW and FWB in the past 30 years. The CE-MVN would also continue to maintain the offshore reach to the present dimensions and continue to dispose of the material in the Gulf of Mexico within the surf zone.

The Port of Iberia would likely continue to maintain the Commercial Canal at the present dimensions under the existing permit WC-19-990-2265. The quantity of material presently being dredged within the project area is significantly less than any of the proposed action alternatives. No impacts on water quality would be expected.

4.3.2 Recommended Plan

Deepening and widening existing waterways could allow high salinity water to enter the inshore wetlands. The wetland vegetation of the study area consists of species that can only tolerate limited increases in salinities. Agricultural areas also exist upstream of FWB and increased salinities for the farmers and ranchers are a serious concern.

Increases in salinity and saltwater inundation would convert brackish and intermediate marshes to saline marshes and could cause the conversion of marsh to open water. Deepening and widening existing waterways could also allow high salinity water to enter the inshore wetlands. A 2-dimensional numerical analysis model and existing data was used to determine the effect of deepening the channel on salinity levels in the project area. The analysis indicated that the proposed channel deepening should have little to no influence on salinity levels within the project area. No adverse impacts to water supply interests or to other designated uses, including fishing and wildlife productivity and primary and secondary contact recreation would be experienced. A more detailed discussion of the results of the salinity model is included in appendix B.

Dredging in Commercial Canal, GIWW, and FWB could impact the larval stages of estuarine species migrating inshore. Two of the most economically important species in the area are brown shrimp and white shrimp. The adults of both species spawn offshore, and their post-larvae depend upon tidal currents to reach inshore nursery areas. The peak of brown shrimp immigration occurs from March to May. Beginning in late April or early May, the shrimp, which are then juveniles and sub-adults, begin making their way back to the gulf. The peak of post-larval white shrimp immigration begins in July and extends until September. The juveniles and sub-adults of this species begin their migration to the gulf in August, but the peak of their movement is during September and October. Blue crabs and many species of fish have similar life cycles. Spotted sea trout and black drum, which spawn in the estuarine waters, would avoid the area during dredging operations; the increased depth of the channel would not adversely affect the spawning of these species.

The larvae and small juveniles of many species would be impacted most by turbidity caused by dredging operations. Losses to bottom-dwelling animals would be temporary. These invertebrates would recolonize dredged areas after dredging operations are completed. Any decrease in primary productivity of the estuarine waters caused by increased turbidity during dredging operations would be short-term. No adverse long-term effects on water quality would be expected.

No oyster leases are located in the areas proposed for dredge material disposal with the exception of Weeks Bay. Weeks Bay has traditionally been listed as public seed grounds, though unproductive, because of the ongoing freshening of the entire Vermilion Bays area. The only oyster leases in close proximity to the project area are located south of Marsh Island and to the west of FWB. The longshore drift is east to west and would likely keep the oyster leases from experiencing any adverse impacts (Penland 1990).

4.4 BEACHES

4.4.1 No Action Plan

The beaches along the west of FWB would continue to experience the marine forces of the Gulf of Mexico. Over wash would occur during storms and supra-tidal events with reworking of beach materials.

4.4.2 Recommended Plan

Dredge material from the entrance channel extending approximately 3 to 5 miles to the 20-foot contour would be used for beach nourishment along the western flanking shore of FWB. Dredge material disposal in shallow water, along the shoreline, would directly and indirectly protect interior saline marshes, which provide valuable nesting and feeding areas for a large number of avian species. The USFWS will be consulted to determine whether the RP would comply with the Coastal Barrier Resources Act of 1982 as

reauthorized by the Coastal Barrier Improvement Act of 1990 upon completion of the final permit application package.

4.5 GULF OF MEXICO WATER BOTTOMS

4.5.1 No Action Plan

The gulf water bottom in the navigation channel and immediate vicinity would continue to be periodically affected by maintenance operations. The material dredged from the channel would be of similar grain size and consistency as the material in the disposal areas. Dredge material would continue to be placed adjacent to the gulf beach for shoreline erosion control. Some of the bottom dwelling animals do not have the ability to move and would be lost during dredging operations. Fish and large invertebrates such as crabs and shrimp, would be able to move from the area to adjacent habitats during dredging operations.

4.5.2 Recommended Plan

Effects would be limited to the channels and the shoreline area. The area of impact in the channel and along the shoreline would be larger than the No Action Plan since dredging farther out into the gulf would be necessary and more material would be excavated. The width of the offshore reach of FWB, however, is currently authorized and maintained at 250 feet and would not change.

Mobile species of crabs, fish, and shrimp would probably avoid the hydraulic dredging operations, but slow-moving or immobile benthic species would probably be destroyed. Rapid recolonization of dredged water bottoms by benthic invertebrates would be expected and no adverse effects to the aquatic species that occur in these areas would be expected.

4.6 THREATENED/ENDANGERED SPECIES

4.6.1 No Action Plan

No significant change in the status of listed species would be expected. The brown pelican population is expanding in Louisiana and this trend would be expected to continue. Rise and fall of populations of other Federally listed species would depend on conditions outside of the study area.

4.6.2 Recommended Plan

Initial consultation with NMFS and USFWS resulted in the design of dredging and disposal of material in a manner that would not likely have an adverse impact on listed species. Dredging would be accomplished by using a combination of bucket dredges or

cutterhead dredges. Hopper dredges are opposed by NMFS for their effect on endangered turtle species and were addressed in a Gulf Regional Biological Opinion (GRBO) dated 19 November 2003 for the existing project. The GRBO also determined that the use of cutterhead pipeline dredges for maintenance operations was not determined to have significant impacts on sea turtles and/or their critical habitat. A project specific Biological Assessment has been prepared for the species under the purview of USFWS and NMFS (appendix B) to address the additional channel deepening associated with FWB).

4.7 ESTHETIC VALUES/OPEN SPACE

4.7.1 No Action Plan

The project is in an area of coastal Louisiana that is relatively stable when compared to other areas of coastal Louisiana. However, the wetlands in the project area are susceptible to erosion resulting from hurricanes, tidal surges, and other climatic conditions and this susceptibility would continue. Additionally, these wetlands would continue to be impacted by oil and gas explorations and inevitable subsidence, though the degree of impacts is difficult to predict. Furthermore, the banks of the GIWW would continue to erode due to wave action caused by weather and navigation. This erosion would continue to contribute to the open water in some of the brackish and saline marshes.

4.7.2 Recommended Plan

If implemented, the RP would offer an opportunity for replanting and rebuilding coastal marshes with the material dredged from the GIWW and placed either beneficially in the open water areas of the adjacent marshes, island building, or used for bank stabilization. In either case, plantings of native species would be encouraged to maintain the flora and fauna integrity of the area. The dredge material should be placed in a manner that is consistent with the natural surrounding landscape.

4.8 RECREATION

4.8.1 No Action Plan

Consumptive recreation would remain relatively stable, but would ultimately depend on the status of coastal erosion and the health of the marshes and cheniers. The area would continue to function as prime wintering grounds for waterfowl and excellent habitat for white-tailed deer hunting.

Non-consumptive recreation would continue to be provided by a relative abundance of public facilities including state parks, wildlife refuges, and birding trails. This area of the

coast is a prime resting area for migratory neotropical songbirds in route to and from their central/south American wintering grounds.

4.8.2 Recommended Plan

The RP would not cause permanent negative impacts. Camps along the GIWW would be negatively impacted by the increased turbidity caused from construction. The turbidity would also temporarily impact fishing.

An increase in tonnage and traffic in the Commercial Canal, FWB, and the GIWW would impact the recreational boater and fisherman by causing increased wake action in the main waterways.

4.9 CULTURAL RESOURCES

4.9.1 No Action Plan

All known or unknown cultural resources would continue to be exposed to conditions, as they currently exist along channel bank lines and adjacent marsh areas. Vessels navigating the channel would continue to create substantial wave action that would cause severe erosion and the destruction of cultural resources located along the unprotected bank line. Impacts from oil and gas exploration, flood control projects, and ship channel construction would continue to cause increased saltwater intrusion. The resulting loss of marsh vegetation would increase erosion and cultural resource site destruction.

4.9.2 Recommended Plan

Natural levee areas currently exposed along the channel bank lines could be subjected to increased erosion from larger vessel wave action and damaged from the initial placement of dredge material in channel disposal areas. Proposed upland disposal area construction and use, which includes berm construction and dredge material placement, could also impact high probability locations.

Project activities associated with channel deepening, channel disposal, berm construction, and dredge material placement in near-shore coastal and marsh re-creation areas could result in the disturbance of significant historic watercraft if any are present in the project area.

The CE-MVN plans to conduct additional archaeological investigations in all high probability areas delineated and recommended by Lee and others (2004). These investigations will take place during the next project phase and will include the surveying of terrestrial and submerged project areas that would be directly impacted by proposed construction. Section 106 consultations with the Louisiana SHPO are ongoing and would be concluded prior to initiation of any project construction activities. However, if during construction activities, any unrecorded cultural resources were determined to exist within

the proposed project boundaries, no work would proceed in the area containing these cultural resources until a USACE archeologist was notified and final coordination with the SHPO was completed.

4.10 SOCIO-ECONOMIC RESOURCES

4.10.1 Business and Industrial Activity

4.10.1.1 No Action Plan

No significant change to business and industrial activity would occur. The Port of Iberia would continue to maintain its share of economic activity in the traditional offshore petroleum industry. Current channel depths are insufficient for deep-water access to the Port of Iberia. In addition, the existing infrastructure of the Port of Iberia may become obsolete.

4.10.1.2 Recommended Plan

Additional rig traffic associated with this alternative would be expected to increase the activities of the local construction and fabrication industries.

4.10.2 Employment

4.10.2.1 No Action Plan

The future focus on extensive offshore deepwater development and the current inability of numerous ports along the Louisiana coast to meet deep-water access needs would present lost opportunities for construction and service contracts and related employment.

4.10.2.2 Recommended Plan

Additional rig traffic associated with this alternative would be expected to increase the activities of the local construction and fabrication industries. Thus, a proportionate increase in related employment opportunities may occur.

4.10.3 Property Values

4.10.3.1 No Action Plan

No significant change would be expected in the values of commercial, residential, or agricultural properties.

4.10.3.2 Recommended Plan

The alternative would allow for an increase in offshore deepwater development business opportunities. Port facilities would improve infrastructure to construct and transport larger products. Property values would appreciate normally.

4.10.4 Land Use

4.10.4.1 No Action Plan

No significant change would be expected in the pattern of land use.

4.10.4.2 Recommended Plan

A slight change in land use would be expected with the implementation. An increase in the demand of existing industrial areas would cause an expansion into the agricultural areas.

4.10.5 Displacement of Farms

4.10.5.1 No Action Plan

No changes would be expected to agricultural land.

4.10.5.2 Recommended Plan

Little to no impact would be expected to agricultural land within the immediate vicinity of the Port of Iberia.

4.10.6 Public/Community Facilities and Services

4.10.6.1 No Action Plan

No significant change in the facilities and services of the study area would occur.

4.10.6.2 Recommended Plan

A corresponding increase in services of the study area would occur. Existing facilities and services would adjust to accommodate the changes in demand that may result from implementation of the alternative.

4.10.7 Tax Revenue

4.10.7.1 No Action Plan

No significant change in the current and expected pattern of taxation would occur.

4.10.7.2 Recommended Plan

The cost of implementing any alternative is shared with the Port of Iberia. The Port of Iberia generates revenue by port tenant rates and harbor usage fees. No other effects on taxes would be anticipated. Tax receipts collected by the state and parish would likely increase with the increase in business opportunities associated with offshore deepwater development.

4.10.8 Population/Displacement of People

4.10.8.1 No Action Plan

Slight increases in population of the study area would continue.

4.10.8.2 Recommended Plan

Slight temporary increases in population of the study area may occur. The alternative would not require the displacement of people or businesses.

4.10.9 Community and Regional Growth

4.10.9.1 No Action Plan

Community and regional growth would be expected to increase slightly with the current level of economic activity.

4.10.9.2 Recommended Plan

Slight temporary increases in regional growth associated with offshore deepwater development projects should the alternative be implemented.

4.10.10 Community Cohesion

4.10.10.1 No Action Plan

No change in the nature and quality of community cohesion would occur.

4.10.10.2 Recommended Plan

No significant change would occur in the nature and quality of community cohesion.

4.11 AIR QUALITY

4.11.1 No Action Plan

The level of business activity at the Port of Iberia would be affected by the fluctuations of the petroleum industry. However, related emissions would not likely have significant effects on the overall air quality due to the open nature of the study area.

4.11.2 Recommended Plan

Construction equipment associated with channel dredging operations includes dredges, tugboats, amphibious vehicles, draglines, small boats, and other related equipment. No significant effects from the pollutants of this equipment would be expected to air quality. Increased industrial activity associated with offshore deepwater development would increase the amounts of emissions at the Port of Iberia; however, no adverse impacts would be expected due to the open nature of the study area.

4.12 HYDROLOGY AND WATER QUALITY

4.12.1 No Action Plan

Projected water quality for the study area would be expected to remain similar to current conditions. Access to the Gulf of Mexico from the Port of Iberia would remain limited due to 12-foot average water depths through FWB. Traffic in the channel would increase to accommodate the growing offshore industry. Increased traffic could cause increased discharges in the channel. The port's current activities, which include construction of offshore platforms, supplying products used in oil exploration, and services to maintain offshore activities, would be hampered by the limited size of the access channel to the Gulf of Mexico.

Factors that currently affect water quality in the study area are municipal, industrial, and agricultural sources; urban runoff; atmospheric sources; and discharge from vessels. These factors would be expected to continue to affect the water quality. Recent increased regulation and legislation, as well as an increase in public awareness of environmental issues, may result in slight reductions in the amount of pollutants released into the study area, which would somewhat improve water quality.

Provided excessive erosion does not occur along the spit separating the opening of FWB from Vermilion Bay, no changes would be expected. Salinities would continue to vary based upon the tidal affect from the Gulf of Mexico and the effects of the freshwater inflow from the Vermilion River and the Mermentau Basin. See appendix B for the complete Water Quality Report.

4.12.2 Recommended Plan

The effects of construction due to dredging and disposal areas may include, but are not limited to typical short-term effects including increased turbidity, sedimentation, temperature, and oxygen demand; decreased oxygen; and contamination from construction equipment and operations. The effects of construction would be temporary and would subside once construction ends and denuded areas are restored.

Long-term effects would include a healthier, deeper channel for access from the Port of Iberia to the Gulf of Mexico, as well new marsh creation areas created from dredge material. In addition, the shoreline on the gulf adjacent to FWB, as well as the designated shoreline in Weeks Bay that would be used for disposal, would gain some protection from tidal influence of the Gulf of Mexico.

The elutriate data indicates that the impacts of dredging on contaminant availability would be minimal. The results of elutriate and sediment data show that placement of dredge material should not cause any negative effects to the designated disposal areas, including the marshland creation areas.

Effects of dike construction/bank line restoration would be minimal and may include contamination from equipment and construction activities, increased turbidity, and mixing of sediments. These effects should be temporary and return to pre-construction conditions shortly after construction.

The effects caused by new earthen/riprap dike construction would be permanent and may include a slight increase in runoff due to the taller banks and compaction of the dike materials. These effects would be considered minor and would not be detrimental to the environment. The most significant and long-term effects from the placement of new dikes and riprap would be positive because the new channel banks would be stabilized and erosion would be prevented. In addition, marshlands would be preserved as erosion decreases due to the deposition of dredge material in the marshes.

The effects due to marsh creation would result in healthier wetlands due to a reduction in nutrients as well as a lesser tendency toward algae blooms, and improved dissolved oxygen levels. There would be less erosion due to the creation of marshland from dredge material. None of these effects are considered significant changes to current organic, metal, nutrient, or pathogen levels.

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CHAPTER 5 CUMULATIVE IMPACTS

A "Cumulative impact" is the impact on the environment, which results from the incremental impact of the action (implementation of the RP) when added to other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes such actions. Cumulative impacts are looked at over a temporal as well as a spatial scale.

The temporal levels that were looked at are past actions, present action, proposed action, and future actions. The geographical extent of the resources were looked at as shown in **table EIS 5-1**.

Table EIS 5-1
Geographic Levels Used For Cumulative Impacts Analysis

General Geographic Level	Study Specific Geographical Area	Abbreviation Used in Text
National Level	United States	US
Watershed Level	Mississippi River Watershed	MRW
State Level	Louisiana	LA
Study Area Level*	Tech/Vermilion Basin	TVB
	Mermentau Basin	MB

Figure EIS 5-1 *Shows the Coastal Area Basins in the Study Area*

Figure EIS 5-1 Coastal Louisiana Basins.

5.1 MARSH

Past Action

MRW, LA, TVB, and MB

Louisiana contains 40 percent of the continental United States coastal wetlands (Gosselink 1984) and wetlands are a prevalent characteristic in the study area. Coastal wetland loss in Louisiana has averaged 65 km^2/yr (25 mi^2/yr) (Boesch et al. 1994). These losses occurred from a variety of activities (human-made and natural), including Mississippi River levees, oil and gas development, navigation channels, subsidence, sea level change, etc. Subsidence, saltwater intrusion, shoreline erosion, vegetative herbivory, as well as human-made pipelines and canals resulted in loss of wetland resources. Marsh management activities and CWPPRA projects moderate the losses of wetlands. There is the conversion of marsh to open-water areas. The Mississippi River levee cuts off sediment flow that would counter subsidence of marshes.

The Commercial Canal, GIWW, and FWB were constructed through fresh, intermediate, and brackish marsh environments. Dredge material was disposed of on areas that once served as valuable fish and wildlife habitat. Disposal of dredge material from past dredging of these channels by the local interests, as well as the Federal Government has converted some of these marsh areas to less valuable habitat.

The Mermentau Basin is maintained as a freshwater basin because of legislation in 1946 directing the USACE to construct water control structures to impede salinity increases. The premise for this legislation was to provide a freshwater source for the intense agricultural industry existing within this basin.

Present Action

MRW, LA, TVB, and MB

Continued reduction in wetland resources due to subsidence; salt water intrusion; wave induced erosion from man-made and natural causes; and vegetative herbivory along coastal Louisiana. Institutional recognition of wetland resources e.g., Protection of Wetlands (Executive Order 11990), marsh management permits and CWPPRA projects moderate effects to reduce the trend. Such land losses are predicted to continue with or without the proposed action. LADNR has constructed rock foreshore protection dikes to reduce land loss due to erosion and wave wash.

Port operations continue to maintain the Commercial Canal as would CE-MVN continue to maintain the GIWW and FWB to the present channel dimensions. The interior marshes within the project area remain relatively stable while the erosion along the bank lines would continue to cause substantial marsh loss. The cumulative impacts associated with past dredging practices, have resulted in further development of the Port of Iberia and Intracoastal City, as well as numerous camps and hunting and fishing communities, and have had the overall affect of degrading various marsh habitats.

Recommended Plan

TVB and MB
Dredge material disposal easements would be obtained in perpetuity for all disposal areas within the project area. The marsh creation areas would have to be maintained as marsh to avoid and minimize environmental impacts associated with the navigation channel. The armored banks must also be maintained in order to preserve the marsh created with the sole purpose of reestablishing the pre-existing bank lines and preventing further erosion at a rate of approximately 3 to 5 feet per year. The LADOTD in conjunction with the Port of Iberia have agreed to assume responsibility for the maintenance of the newly established bank lines in order to obtain Coastal Zone Consistency Determination from the LADNR.

There would be reduced impacts to wetlands (BLH, FM, and IM) and no need for mitigation. This plan would create more wetlands as well as protect and rebuild eroding bank lines.

Possible Future Action

US
Coastal land loss in general and marsh loss in particular (LA) would likely continue.

MRW
Levees would continue to limit sediment nourishment of the marsh. Some sediment and water diversion projects could be built.

LA, TVB, and MB
Large programs are now in effect (e.g. CWPPRA, Coast 2050, Barataria Terrebonne National Estuary Program [BTNEP], etc.) to develop information, raise consciousness, and implement solutions to stabilize coastal wetlands in Louisiana. However, it is questionable that the wetland losses can be stopped and doubtful that these programs will reverse the major losses that have already occurred. CE-MVN has a continuing authority project (CAP) section 1135 study underway to place rock foreshore protection dikes to reduce land loss due to erosion and wave wash.

Cumulative Impacts

US and MRW
Would have continued significant cumulative loss of wetland resources due to wetland fragmentation, conversion, and land loss.

LA
The Port of West St. Mary would likely continue pursuing a permit to deepen the GIWW in order to accommodate deeper draft vessels using local ports. It is conceivable that numerous smaller ports would pursue the same or similar channel deepening action with the hope of attracting additional waterborne commerce to localized areas. Impacts to

marsh, because of deepening and widening channels would likely continue because of navigation channel modifications.

TVB and MB
Proposed action impacts additive to impacts by permitted marsh management activities, CAP, authorized CWPPRA, and Coast 2050 projects. However, land loss would likely continue to occur in isolated areas due to management practices and artificial water management activities.

The proposed project would convert 343 acres of fresh marsh to upland confined disposal areas. However, the overall impact to marsh would be positive, as the majority of the material would build marsh with dredge material. The easements associated with marsh creation areas would be held in perpetuity by the Federal Government and prohibit the development of the marsh into camps and hunting and fishing communities at the expense of the marsh. The hydraulic modeling for the Port of Iberia indicated that the deepening of the FWB reach of the project could increase the efficiency in which the Vermilion River drains the Teche/Vermilion watershed. The result could be increased pesticides entering the Vermilion Bay System and thus the Gulf of Mexico.

5.2 ESSENTIAL FISH HABITAT

Past Action

US, LA, TVB, and MB
General decrease in quality and quantity of EFH due to isolated loss of wetlands and the action of maintaining the Mermentau Basin as a freshwater environment coupled with the continuing freshening trend within the Teche/Vermilion Basin. Conversion of wetland EFH to open water sand flats, and other types EFH is occurring.

Present Action

US
There is an institutional recognition of the decline in EFH (Magnuson-Stevens Fishery Conservation and Management Act).

LA, TVB, and MB
Experiencing continued loss or conversion of some types of EFH.

Recommended Plan

TVB and MB
Increase in marsh EFH by creation of wetlands at the expense of other types EFH.

Possible Future Actions

US and LA
Loss of wetlands that provide EFH would continue.

TVB and MB
The continued uses of the FWB lock to reduce salinity intrusion, which indirectly prevents the loss of marsh EFH. The FWB lock would be used as presently authorized by the River and Harbor Act of July 14, 1960, and the Master Water Control Plan, Mermentau River Basin, Louisiana, 1988.

Cumulative Impacts

US and LA
Significant cumulative loss of EFH, especially wetlands related EFH in LA.

TVB and MB
Localized increase in some types of wetland EFH due to restoration efforts.

5.3 ESTUARINE WATER BODIES

Past Action

US and LA
Water bottoms increased in areas as channel construction, wetland fragmentation and loss has occurred over all areas. Some increases in the acreages of estuarine water bodies have been realized because of shoreline erosion and subsidence. Open water areas provide fisheries habitat but do not provide cover for larval and juvenile stages and do not provide detrital input to the system like marsh areas. It has been shown that deteriorating marshes increase productivity of fisheries, but as the marshes decline past a critical point, fisheries productivity would likely decrease. Eventually, it is possible that so little wetlands would remain that fisheries production would collapse. Fisheries resources are dependent on wetlands for nursery, foraging, and grow out.

TVB and MB
The large majority of the wetlands within the Mermentau Basin and the Teche/Vermilion Basins remain relatively stable when compared to other coastal regions of Louisiana. However, the Mermentau Basin has been maintained as a freshwater basin to accommodate the agricultural industry with a constant supply of freshwater. The Teche/Vermilion Basin is experiencing a freshening trend because of the continued freshwater input from the Atchafalaya and Vermilion Rivers.

TVB
The construction of FWB and the GIWW has resulted in the alteration of the natural hydrology of the basin.

Present Action

TVB and MB
The estuarine water bodies within the Mermentau Basin and the Teche/Vermilion Basin continue to experience isolated areas of erosion. The Mermentau Basin is maintained as a freshwater basin by using water control structures on Schooner Bayou, FWB, and Leland Bowman Lock on the GIWW.

Recommended Plan

TVB and MB
The overall acres of estuarine water bodies in the project vicinity would decrease due to marsh creation activities.

Possible Future Actions

US, MRW, and LA
Overall, however, increasing acreage of water bottoms as wetland loss continues over all areas. Restoration projects (LCA, etc.) could reduce wetland loss rates and could convert some open water areas into wetlands smothering benthic communities in the process.

TVB and MB
The RP would convert water bottoms to marsh creation thus affecting the benthos. Creation of wetlands would provide nursery, foraging and grow out areas for fisheries resources utilizing the marshes.

Cumulative Impacts

Proposed action impacts additive to impacts by permitted marsh management activities and authorized CWPPRA & Coast 2050 projects.

5.4 BEACHES

Past Action

US and LA
Beaches naturally build and erode dependent on deltaic cycle and other geomorphic processes.

MRW
Beginning in 1927 flood control of Mississippi River, and subsequent construction of jetties and other structures altered natural sediment availability and beach building processes.

TVB and MB
Maintenance material excavated from the existing FWB Bar Channel was placed adjacent to the beach on the west side.

Present Action

US and LA
Beaches continue building and eroding depending on human disruptions of natural geomorphic processes.

MRW
Disruption of deltaic cycle, thereby further changing natural geomorphic processes of barrier systems resulting in net losses throughout coastal areas associated with the Mississippi River Watershed.

TVB and MB
Continued maintenance of the FWB Bar Channel would result in material being added to shallow open water adjacent to beach on the west side of bar channel.

Recommended Plan

LA, TVB, and MB
Project alternatives would result in greater quantities of material being placed in the near ore waters on the west side of the FWB Bar Channel. As a result, more sediment would be available within the littoral zone and material would be continually redistributed along beaches within in and around the associated coastal areas.

Possible Future Actions

US, MRW, and LA
Beaches would continue to be reworked because of natural and human induced changes in the environment.

Cumulative Impacts

Likely that material added to the near-shore area would be reworked during climatological events and continue to add to the formation of the Chenier Plains west of the project area within the Mermentau Basin.

Secondary Impacts

The proposed action would increase the number of deepwater draft vessels utilizing the AGMAC as compared to the future no action. Much of the marine debris found in the Gulf of Mexico and along its shorelines can be traced to the offshore oil and gas industry and commercial fishing vessels. A localized increase of marine debris could be expected compared to without project conditions.

5.5 GULF WATER BOTTOMS

Past Action

MRW
The area is characterized by sediment distribution throughout. Changes in land management practices and other human induced actions have largely contributed to defining the characteristics of gulf water bottoms.

TVB and MB
The FWB navigation channel was constructed in 1967. Prior to 1985, dredge material has been disposed of on the west side of the channel in open water. As of 1990, after coordinating with LADNR, Coastal Management Division, dredge material was placed in the near-beach shallow open water to ensure a constant sediment source remaining in the littoral drift in order to continue nourishing the Chenier Plains of coastal Louisiana. Approximately 1 million cubic yards are dredged from the FWB Bar Channel every 4 years.

Present Action

LA, TVB, and MB
The present dredging cycle for FWB is approximately 4 years. Approximately 1 million cubic yards of material dredged from the bar channel of FWB is placed in the Gulf of Mexico water bottoms adjacent to the shoreline on the west side of the channel.

Recommended Plan

LA, TVB, and MB
Project alternatives would result in greater quantities of material being placed in the near-shore waters on the west side of the FWB Bar Channel. Construction material placed in the near-shore shallow water would be approximately 4,132,000 cubic yards of material. Approximately 2.3 million cubic yards of material would be dredged every 3 years and placed in the near-shore shallow open water adjacent to the beach. As a result, more sediment would be available within the littoral zone and material would be continually redistributed along beaches around the associated coastal areas. Mud flats would likely be created in the northern most reaches of the disposal area.

Possible Future Action

US, MRW, and LA
Gulf of Mexico water bottoms would continue to be reworked because of natural and human induced changes in the environment. Gulf of Mexico water bottoms containing large deposits of sands may be used in the future for coastal restoration throughout coastal Louisiana.

Cumulative Impacts

MRW, LA, TVB, and MB
Some Gulf of Mexico water bottoms would be temporarily converted to mud flat habitat because of the RP. However, more material would be available within the littoral zone to be transported by long-shore drift. The coastal chenier habitat in coastal southwestern Louisiana would continue to benefit from the material nourishing the beaches and Chenier Plains.

5.6 THREATENED/ENDANGERED (T&E) SPECIES

Past Action

US, MRW, LA, and TVB
Decrease in T&E populations and critical habitat. T&E species that may occur in the area have been adversely affected by the large-scale wetlands and other habitat type loss.

MB
Existing project uses dredge material from maintenance events for beach nourishment, which may minimally provide some piping plover resting habitat. The inshore reaches of FWB and the GIWW have not needed to be dredged in nearly 30 years.

Present Action

US, MRW, LA, TVB, and MB
Institutional recognition of T&E by Endangered Species Act, the Marine Mammal Protection Act of 1972; and the Bald Eagle Protection Act of 1940. Some decrease in T&E populations and critical habitat partially due to loss of wetlands, which are critical habitat for various species.

Recommended Plan

MRW, LA, TVB, and MB
Implementation of the RP would create habitat for some T&E species and would not require mitigation.

Future Possible Action

US and MRW
Institutional recognition of T&E species and critical habitat would continue as well as the loss of some wetland-dependent T&E species.

MRW, LA, TVB, and MB
Implementation of the RP would create habitat for T&E species and would not require mitigation. The implementation of LCA & CWPPRA projects would likely result in

additional marsh management permits and create, protect, and restore habitat vital to T&E species.

Cumulative Impacts

US and MRW
Cumulative loss of wetlands would continue as well as the resultant loss of some wetland-dependant T&E populations.

LA, TVB, and MB
T&E that may occur in the area have been and would continue to be adversely affected by isolated wetland loss and fragmentation occurring in the Mermentau Basin and Teche/Vermilion Watershed. The proposed action would not make the situation worse. Therefore, the project would not significantly increase the level of cumulative impact for T&E species.

5.7 ESTHETIC VALUES/OPEN SPACE

Past Action

US and MRW
Technically recognized through the 1988 USACE Visual Resources Assessment Procedure and institutionally recognized through the Wild and Scenic Rivers Act, Scenic Byways, and others. Visual resources have been destroyed, enhanced, or preserved by human activities.

LA, TVB, and MB
The coastal Deltaic and Chenier Plains have many unique features. The diverse habitats provided by isolated Pleistocene deposits, alluvial ridges, swamps, marshes, cheniers, salt domes, beaches, bays and near-shore gulf waters support extremely dynamic and productive biotic communities. Prior channel construction has taken away from the natural beauty of this unique wetland.

Present Action

Same described for past action.

Recommended Plan

LA, TVB, and MB
The RP may enhance the esthetic value of the area by creating new wetlands and preventing further erosion along the channel bank lines.

Future Possible Action

LA, TVB, and MB

The RP may enhance the esthetic value of the area by creating new wetlands and preventing further erosion along the channel bank lines. Other ports may pursue deeper draft channels and thus further degrade the natural beauty of the wetlands.

Cumulative Impacts

US and MRW
Open wetland and wilderness areas disturbed by channel construction and navigation industry. Continued human population growth and development as well as other human activities have the potential to destroy, enhance, or preserve the quality of scenic byways and other undetermined visual resources.

LA, TVB, and MB
Wetlands would be created proportionate the quantity of material being dredged though channel deepening is not a favorable environmental practice. Other ports may pursue deeper draft channels and thus further degrade the natural beauty of the wetlands.

5.8 RECREATION

Past Action

US and MRW
Decrease in wetland dependent recreational activities.

Present Action

US and MRW
Institutionally recognized decline in recreational resources (Pittman-Robertson Act; Ducks Unlimited). Loss of some wetland-dependent recreation resources would continue.

MRW, TVB, and MB
Land loss is causing dramatic changes in recreation opportunities.

Recommended Plan

LA, TVB, and MB
The recreational environment in and around the project area would experience limited short-term disruption imposed by the physical size and working activities of the floating dredge facility and construction activities.

Possible Future Action

US and MRW

Potential loss of recreational resource base due to continued coastal land loss.

Cumulative Impacts

US and MRW
A significant cumulative loss of wetland-dependent recreation resources would occur.

5.9 Cultural Resources

Past Actions

US and MRW
Cultural resources have generally been lost; Wetland loss and erosion forces produced an unstable environment for the preservation of archeological/cultural sites. Modern land-use practices associated with agriculture, the timber industry, oil and gas exploration, urban/commercial development, flood control, construction, and vandalism have contributed to the disturbance and loss of cultural resource sites.

LA, TVB, and MB
Impacts from oil and gas exploration, flood control projects, and ship channel construction brought about increased salt-water intrusion. The resulting loss of marsh vegetation increased erosion and cultural resource site destruction. Erosion and natural subsidence are the primary causes for cultural resource site destruction within the study area.

Present Actions

US, MRW, LA, TVB, and MB
Wetland loss and erosion forces produce an unstable environment for the preservation of some archeological/cultural sites. Institutional recognition of the importance of Cultural Resources under National Historic Preservation Act of 1966, as amended; the Native American Graves Protection and Repatriation Act of 1990; and the Archeological Resources Protection Act of 1979. Human activities as well as natural processes can potentially destroy historic and natural resources.

Recommended Plan

LA, TVB, and MB
There is a very high probability for the presence of archaeological sites on natural levees of the project area, and watercraft from all historic periods could be present within the project area. With implementation of the RP, natural levee areas currently exposed along the channel bank lines could be subjected to increased erosion from larger vessel wave action and damaged from the initial placement of riprap bank protection. Proposed disposal area construction and use, which includes berm construction and dredge material placement, can also impact these high probability locations. Project activities associated

with channel deepening, bank line protection, berm construction, and dredge material placement could result in the disturbance of significant historic watercraft.

Possible Future Actions

US and MRW
There would be a potential loss of resources due to natural and human causes.

Cumulative Impacts

Significant cumulative impacts include potential loss of undiscovered archeological/cultural resources exposed during wetland fragmentation and loss. Any project assisting in arresting land loss would protect cultural resources from coastal erosion.

5.10 SOCIO-ECONOMIC RESOURCES

5.10.1 Business and Industrial Activity

Past Action

US, TVB, and MB
In the past, the Mermentau Basin and the Teche/Vermilion watershed were primarily unaffected by commercial navigation until the GIWW and FWB was constructed toward the middle of this century. Business and Industrial Activity largely supported an agriculture-based economy. After World War II, petroleum exploration began to yield large quantities of oil within this region of Louisiana and the petroleum industry began to take off in this region of south central Louisiana. As a result, many waterways, large and small were constructed to accommodate petroleum exploration and production. The offshore petroleum industry support is the main economic engine and drives the secondary and tertiary business activities.

Present Action

US TVB, and MB
Business and Industry activity is dependent on the level of exploration and production in the offshore petroleum industry. Current trends are for deeper offshore drilling, which require larger rigs.

Possible Future Actions

Future business and industry activity will decline because petroleum activity trends to larger rigs and the current channel will not support fabrication on large rigs. Secondary and tertiary activity will decline accordingly.

Cumulative Impacts

US, TVB, and MB
Future business and industry activity with the project will remain viable. Business will be strong and vital during 24 to 30 month typical fabrication period but will fall to minimal but sustainable levels between contracts.

Secondary Impacts

US, TVB, and MB
Smaller businesses associated with the petroleum-based industry would likely increase in this region of Louisiana.

5.10.2 Employment

Past Action

US, TVB, and MB
Support for the offshore petroleum industry is dominant employer. Service vessels and fabricators require a useable channel.

Present Action

US, TVB, and MB
Employment is dependent on the business activity in the oil patch. Large shifts in employment occur with fabrication activity.

Possible Future Actions

US, TVB, and MB
Employment will decline as fabricators lose work due to channel depth. Secondary and tertiary employment will decline accordingly.

Cumulative Impacts

US, TVB, and MB
Employment will rise and fall with business activities but with potential contracts, a minimal level will be maintained.

5.10.3 Property Values

Past Action

TVB and MB
Port expansion has raised property values over undeveloped land.

Present Action

TVB and MB
Port facilities have maintained relative property values over the years.

Possible Future Actions

TVB and MB
Port facilities may close due to lack of business and thus property values may decline.

Cumulative Impacts

Port facilities will not close and property values will be maintained with normal appreciation.

5.10.4 Land Use

Past Action

TVB and MB
Lands around the Port of Iberia areas include large tracts of coastal wetlands enhancing fish and wildlife resources used for commerce and recreation; more upland areas are used for production of rice, sugarcane, and soybeans. Oil and gas production, transportation, and rig construction have enhanced land use development.

Present Action

TVB and MB
Historical land uses have continued. Demand for larger rigs for oil production in the Gulf of Mexico has increased. As in the case of other coastal areas of the Gulf of Mexico, erosion trends have increased along waterways and adjacent wetlands.

Possible Future Actions

TVB and MVB
As in the past, future land use trends will be influenced by waterborne commerce, including channel depths. Without environmental planning, erosion may eventually threaten existing development and related land use trends.

Cumulative Impacts

TVB and MVB
Existing land use trends will continue, including land developments from waterborne commerce and the need for environmental planning in areas where erosion occurs.

5.10.5 Displacement of Farms

Past Action

TVB and MB
Agricultural developments within upland areas and transported along waterways have been highly productive; however, severe storms have periodically caused agricultural losses and displacements of farms.

Present Action

TVB and MB
Trends have continued; subsidence and erosion may have increased the threat of related damage to more sensitive farms.

Possible Future Actions

TVB and MB
Historical trends may continue.

Cumulative Impacts

TVB and MB
Historical trends may continue. Implementation of the RP would have no significant impact to agricultural development.

5.10.6 Public/Community Facilities and Services

Past Action

TVB and MB
As the port facilities grew in response to growth in the oil patch, the need for public/community facilities expanded proportionately.

Present Action

TVB and MB
The present levels of services and facilities have settled to an adequate level as the petroleum industry rises and falls.

Possible Future Actions

TVB and MB
If business activity and employment decline, the need for services and facilities will also fall.

Cumulative Impacts

TVB and MB
As fabrication contracts are won and lost by local firms, services will stabilize with the ebb and flow of business activities.

5.10.7 Tax Revenue

Past Action

US, TVB, and MB
Federal, state, and local tax revenue has increased in direct proportion to the expansion of the petroleum industry in the Gulf of Mexico. A certain number of these revenues rise and fall with the fortunes of the petroleum industry in the U.S.

Present Action

US, TVB, and MB
Federal, state, and local tax revenue increase and decrease as fabrication contracts are started and completed. The local government over time has established a formula for dealing with this fluctuation.

Possible Future Action

US, TVB and MB
Federal, state, and local tax revenues will tend to decline as the fabrication work declines due to the industry trend to deeper waters. The lack of sufficient depth will cause industry to close in the area and the tax base will erode.

Cumulative Impacts

US, TVB, and MB
Federal, state, and local tax revenues will tend to increase and remain stable as the local industry attracts, due to the deeper channel, long construction period deepwater fabrication contracts.

5.10.8 Population/Displacement of People

Past Action

TVB and MB
The population of Iberia Parish has shown a substantial increase of 21.7 percent since 1970. Population trends have shown a decline in the growth rate since 1980.

Present Action

TVB and MB
The population growth rate in Iberia Parish is slowing. If the current population trend continues, growth within the region could become stagnant within the next decade.

Possible Future Actions

TVB and MB
The population growth rate in Iberia Parish is slowing. A slowing growth rate within the parish will continue, affecting the available labor pool and tax revenues.

Cumulative Impacts

TVB and MB
Increased ship traffic within the area will resort in greater demand for labor, and improved earnings for the community. Quality of life factors will be the major determinant in population changes in the Iberia Parish region.

5.10.9 Community and Regional Growth

Past Action

US, TVB, and MB
The population has shown a slight increase of 6.9 percent in the Louisiana Gulf Coast Region since 1970. Excluding Orleans Parish, which has suffered a steady population decline, the region has experienced a 22 percent growth in population.

Present Action

US, TVB, and MB
Population growth within the region appears to be slowing down. Between 1990 and 2000, (the last census available), excluding Orleans Parish, which has continued to decline in population, the region has shown a modest population growth of 3 percent.

Possible Future Actions

US, TVB, and MB
Population trends for the Gulf of Mexico Coast parishes will continue to remain at its modest growth rate of 3 percent or less. Continued declines in Orleans Parish will result in les than 1 percent growth rate for the entire region.

Cumulative Impacts

US, TVB, and MB

Population growth for the region will remain mostly unaffected. Quality of life factors will be the major determinant in population changes throughout the region.

5.10.10 Community Cohesion

Past Action

Initial guidance provided indicates that community cohesion is essentially the unifying force that provides commonality of people living within a community. They experience physical proximity, social similarities, and group activities. Social bonds may develop through mutual social and economic interests, race, income, ethnicity, education, or other forces. With respect to public works, one measure of community cohesion may be its support provided by the public, local, and State of Louisiana authorities.

Present Action

Local sponsors of the project are the Port of Iberia within Iberia Parish and the State of Louisiana. The project site also includes eastern areas of Vermilion Parish. This EIS evaluates community cohesion through its public review process, including coordination of other local, state, and federal authorities, interested businesses and non-profit organizations, and interested residents.

Possible Future Actions

Community cohesion will be influenced by historical trends; however, the dynamics of changing technology as well as social, economic, and environmental conditions suggest that changes will occur over time, some more predictable than others.

Cumulative Impacts

Plans of the proposed project anticipate improved commercial navigation with economic growth, limiting environmental damage and enhancing social and economic conditions within the vicinity.

5.10.11 Environmental Justice

Past Action

Executive Order 12898 directed that Federal agencies consider in their program environmental justice in minority and low-income populations. EPA, as lead agency, defines environmental justice as “the fair treatment and meaningful involvement of all people regardless of race, color, national origin, culture, education, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.”

The agency indicates that "fair treatment" means that no group of people should bear a disproportionate share of the negative environmental consequences, and that "meaningful involvement" means that those potentially affected are involved in the decision-making process.

Present Action

The DEIS review process implemented by the CE-MVN has included the "Public Involvement" process which has included public meetings and discussions with community leaders to include residents that may be influenced by project activities, without regard to race, color, national origin, culture, education, or income.

Possible Future Actions

The State of Louisiana and many local communities are sensitive to the importance of minimizing adverse effects to minority and low-income communities including those within the larger Iberia and Vermilion Parish communities. The recognition is only one-step toward alleviating negative effects influencing minority and low-income populations.

Cumulative Impacts

The DEIS review and public involvement process would include coordination with public officials and interested residents- among them minority and low-income groups, who can express their concerns regarding the project.

5.11 AIR QUALITY

Past Action

US, MRW, LA, TVB, and MB
Air quality was likely better prior to the onset of industrial activity in the region.

Present Action

US and MRW
Air quality is institutionally recognized because of the Clean Air Act. Air quality is deteriorating due to increases in human populations and industry.

LA, TVB, and MB
Emissions from equipment, trucks, vessels, and activities of the major offshore petroleum support sectors of fabrication, repair, and service associated with the businesses of the Port of Iberia are likely the primary source effecting air quality. No calculations have

been performed for this report to estimate the quantities of air pollutants generated by business activities at the Port of Iberia.

Recommended Plan

LA, TVB, and MB
Construction equipment associated with channel dredging operations includes dredges, tugboats, amphibious vehicles, draglines, small boats, and other related equipment. Increased industrial activity associated with offshore deepwater development would increase the amounts of emissions at the Port of Iberia.

Possible Future Actions

US, MRW, LA, TVB, and MB
Deterioration of air quality would continue despite legislative attempts to address it.

LA, TVB, and MB
Continued deterioration of air quality is likely as the offshore petroleum fabrication industry continues to increase.

Cumulative Impacts

LA, TVB, and MB
It is conceivable that increasing marsh vegetation aids in the removal of carbon dioxide and other air pollutants, in comparison to nation-wide natural and human-induced (restoration projects) impacts to air quality. Continued deterioration of air quality is likely as the offshore petroleum fabrication industry continues to increase.

5.12 HYDROLOGY AND WATER QUALITY

Past Action

US and MRW
Water bodies degraded due to untreated and uncontrolled discharges, especially in urbanized and/or industrialized areas.

LA, TVB, and MB
Past actions that have affected water quality in the project area are similar to activities that have occurred in many coastal areas across the United States. The introduction of these waterways to the coastal portion of the Mermentau Basin and the Teche/Vermilion Watershed has changed the hydrologic patterns of the area. Construction of artificial waterways has in many cases altered flow patterns and disrupted natural sheet-flow. In coastal Louisiana salinity intrusion increased, especially during low water seasons and times of drought, as well as transport of pollutants from upstream in the watershed were provided an avenue directly to the

bay and Gulf of Mexico. However, the Mermentau Basin has experienced an opposite impact because of various water control structures constructed on various waterways to control salinity levels. The Mermentau Basin is maintained as a freshwater basin because of legislation passed in 1946, directing the USACE to maintain the basin as fresh to accommodate the agricultural industry. This basin also suffers with poor water quality because of accumulation of pesticides resulting from the intense agricultural practices occurring within the basin.

Coastal wetlands can act as filters for the waters that flow through these areas. Coastal Louisiana has experienced coastal land loss at extraordinary rates due to natural and human activities such as navigation canals though this region remains relatively stable because of freshwater input from the Atchafalaya River and the Vermilion River. In general, however, as wetlands disappear, the natural filtering mechanisms of the coastal waters are lost as well. Coastal Louisiana and the Mermentau Basin and Teche/Vermilion Watershed experienced industrial, commercial, and residential growth throughout the 20th century. This development resulted in point and nonpoint sources of pollution. As discussed earlier, water pollution became a national concern in the late 1960s to early 1970s as many water bodies across the nation were in poor condition. Passage of the Clean Water Act in 1972 and the establishment of state and Federal environmental protection agencies resulted in water pollution control regulations across the nation that have helped restore many water bodies to a healthy condition.

Present Action

LA, TVB, and MB

Present actions that cumulatively affect the water quality in the project area include activities that are beneficial to water quality, as well as, activities that can be detrimental to water quality. As discussed in the future without project condition section, national, state, and local programs exist that both regulate water quality and educate and promote the protection of water quality. Industrial, commercial, and residential facilities/development continues to exist/occur in the project area. Coastal wetlands continue to be lost due to natural and human causes. In addition, oil and gas exploration and development continues to occur. The present actions that indirectly tend to affect water quality in a negative sense are subject to the many laws and regulations that have resulted from the environmental movement in the early 1970s. The science also continues to improve in minimizing impacts as much as practicable.

Recommended Plan

LA, TVB, and MB

Marsh creation, bank line reclamation, and shallow open water material placement would have beneficial effects on water quality in the area. When water flows through marshlands, its quality is improved through the removal of nutrients, contaminants, and reduction in turbidity. Thus, the increased wetland area would likely contribute to improved water quality.

Possible Future Actions

US, MRW, LA, TVB, and MB
Continued present action and increasing potential for accidental discharges due to exposed infrastructure because of coastal land loss.

Cumulative Impacts

US and MRW
State programs that require and/or encourage protection of water bodies would continue.

LA, TVB, and MB
At present, numerous ports are attempting to secure deeper draft channels to accommodate the increased demand for various products associated with the deepwater petroleum industry. The cumulative impact of continuing to deepen non-naturally occurring channels along the Louisiana coastline is unknown. The Louisiana Coastal Area (LCA) Study has attributed approximately 36 percent of the wetland loss in south Louisiana to channel construction relating to the petroleum industry (USACE 2004) The Mermentau Basin and the Teche/Vermilion Watershed would continue to be affected by other activities and programs that would have both beneficial and detrimental effects on water quality conditions. Some of these activities include state and local water quality management programs; National-level programs to address hypoxia in the northern Gulf of Mexico; oil and gas development; industrial, commercial and residential development; state transportation improvement projects (e.g. Proposed Interstate 49), and Federal, state, and local navigation and flood-damage reduction projects. The Port of Iberia project needs to consider these other activities, initiate an aggressive coordination plan with the stakeholders involved, and ensure all activities including the Port of Iberia project complement each other. This is critical to ensure the protection of Louisiana's coastal waters and the health of the public that utilizes these waters. The project would not significantly increase the level of cumulative or secondary impact.

Secondary Impacts

LA, TVB, and MB
The proposed action could increase the number of deepwater draft vessels utilizing the as compared to the No Action Plan. Much of the marine debris found in the Gulf of Mexico and along its shorelines can be traced to the offshore oil and gas industry and commercial fishing vessels. A localized increase in the amount of marine debris could be expected compared to without project conditions.

CHAPTER 6 PUBLIC AND AGENCY INVOLVEMENT AND COORDINATION

6.1 SCOPING

The public and several state and Federal agencies as well as representatives of Vermilion, Iberia, and St. Mary Parishes, and the Port of Iberia participated in this study.

The public involvement program began with the notice of study initiation for the reconnaissance report, as requested by the Port of Iberia. Recipients of the notice included Federal and state congressional delegations; state officials; Federal, state, and local agencies; Vermilion, Iberia, and St. Mary Parish residents; and business owners and tenants at Port of Iberia.

Public involvement in the feasibility phase of the study began with publication of a Notice of Intent to prepare an EIS in the Federal Register. The Notice of Intent explained the proposed study. Two Scoping Meetings were conducted.

The scoping process identified three main groups with interests in the study:

- Individuals and businesses that desire a safe, reliable, and adequate navigation channel to the Port of Iberia
- State and Federal agencies that are concerned with minimizing adverse environmental impacts of the proposed project and maximizing the beneficial use of the dredge material
- Individuals and businesses located within Vermilion, Iberia, and St. Mary Parishes that want to maintain a freshwater environment to support the existing agribusiness as well as minimize adverse environmental impacts by using the disposal area beneficially

The first Scoping Meeting was held on December 3, 2002, at the Vermilion Parish Courthouse and the second took place on December 10, 2002, at the Iberia Parish Courthouse. The study proposal was explained to the participants that attended the meetings and comments, questions, and suggestions were solicited from the audience. A scoping document, which summarized the comments from the Scoping Meetings was compiled and sent to all of the participants. A copy of the concerns and comments communicated at the meetings is provided in appendix B.

A meeting was held May 22, 2004, at the request of the Vermilion Parish Coastal Coalition. The meeting was conducted at the Louisiana State University Agricultural Extension Office in Abbeville, Louisiana. Study results and an updated study schedule

were presented to the meeting participants, which consisted primarily of port affiliates, ranchers, and farmers.

6.1.1 Areas of Resolved Controversy

All participating agencies and Vermilion Parish interests expressed concerns that deepening the channels associated with the project would increase salinity levels. The CE-MVN investigated the potential for saltwater intrusion from alternatives under consideration and prepared a written report of its findings (appendix B, section 3). The investigations concluded that, for a channel 20 feet deep from Port of Iberia through GIWW and FWB, salinity increases would be negligible and should not result in adverse impacts to water supplies, adjacent marshes, or other designated uses.

6.1.2 Areas of Unresolved Controversy

Responses from scoping efforts indicate that interests within Iberia Parish desire a channel from Port of Iberia through the GIWW and FWB to the Gulf of Mexico at a 20-foot depth and a 150-foot width. Vermilion Parish interests are concerned with further bank line erosion problems induced by wave wash from vessel traffic as well as salinity intrusion resulting from climatological events. The participating Federal and state agencies are concerned with the basic idea of the continued deepening and leveeing of channels.

Throughout the scoping and WVA process, local interests as well as resource agencies expressed the desire to use the Weeks Bay disposal area to block off the GIWW from flowing further into Weeks Bay. However, many pipelines, as well as a couple of minor channels, exist within this area and would cause concern should this design be used. The largest unresolved issue surrounding the Weeks Bay disposal area, however, is the lack of solid substrate to support containment for the placed disposal material. Any containment to maintain the disposal area would sink thus providing nearly zero protection to the newly placed material.

A total of 2,407,000 cubic yard of material would have to be placed in three designated upland disposal areas. The site near the lock and bypass channel on FWB would be used, out of necessity, to maintain the integrity of the structure as a navigation feature as well as a salinity impediment. The site on the northern reach of the Commercial Canal would be used because of a lack of practicable beneficial use opportunities within this portion of the project area. Because of the problems associated with Louisiana's disappearing wetlands, resource agencies, including the Louisiana Coastal Management Division demand that the construction material not be used for upland disposal but instead transported to other project areas needing material for coastal restoration purposes. At this time, however, the cost of barging the material out of the project area has not been explored because there are no authorized projects in close proximity to the Port of Iberia Project area to make this alternative economically feasible. During the study process or during the construction phase of the Port of Iberia project, should another practicable

alternative to confined upland disposal arise, the material would be transported and used beneficially.

On October 2, 2003, the CE-MVN received a letter (appendix B) from the USEPA expressing concern with the Port of West St. Mary Project. The letter made clear the concern that the CE-MVN needs to disclose that the Port of West St. Mary project is only viable if the Port of Iberia project is implemented. The overarching concern expressed by the USEPA related to the overall impacts to wetlands resulting from multiple navigation improvement projects being considered in coastal Louisiana.

6.2 COORDINATION WITH LOUISIANA COASTAL AREA TEAM

The Louisiana Coastal Area (LCA) team was coordinated with throughout the study process. The present version of the LCA near-term course of action does not have any restoration features in the immediate vicinity of the project. The goals associated with the LCA Ecosystem Restoration Plan (LCA Plan) are to reverse the current trend of degradation of the coastal ecosystem. The LCA Plan maximizes use of restoration strategies throughout coastal Louisiana:

- Ecological restoration of healthy, productive, and diverse coastal habitats within critical, high-priority coastal areas;

- Enhanced sustainability of critical, high-priority areas within the LCA that have essential for and function of the natural ecosystem; and

- An integrated restoration program that results in multiple benefits, not solely for wetlands, but for communities, industries, and natural resources of the coast.

The only foreseeable impact to the LCA from the Port of Iberia RP would be a positive impact resulting from the disposal of dredge material in the shallow water inter-tidal zone on the west side of FWB. This material would be kept in the littoral drift and deposited up and down the coast, thus mimicking the natural building of the Chenier Plains of coastal Louisiana.

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CHAPTER 7 COORDINATION AND COMPLIANCE WITH ENVIRONMENTAL REQUIREMENTS

7.1 U.S. FISH AND WILDLIFE SERVICES RECOMMENDATIONS

The Service (synonymous with U.S. Fish and Wildlife Service) would not object to further detailed planning and implementation of the proposed project, provided that the following recommendations are incorporated to ensure that fish and wildlife resource conservation receives equal consideration during project planning, design, and implementation:

1. Material dredged from the Commercial Canal, GIWW, and FWB should be used to create or restore emergent wetlands to the greatest extent possible.
    a. Bucket-dredged material should be placed no higher than 5 feet NAVD 88 to restore original bank lines along the GIWW and FWB.
    b. Bucket-dredged material from Commercial Canal should be placed no higher than 5 feet NAVD88 to create emergent marsh in Weeks Bay.
    c. Hydraulically dredged material from the GIWW, FWB, and Commercial Canal should be used beneficially to create marsh in interior and open- water bay DAs; that material should be placed no higher than 3.5 feet and 5 feet NAVD88, respectively.
    d. Tidal creeks in the bay open-water DAs should be dredged prior to sediment disposal to allow differential settlement and increased habitat variability.
    e. All future maintenance dredge material should also be used beneficially to create marsh (i.e., elevation of 1.4 feet NAVD88 after settlement); primarily in open-water areas within existing DAs, and secondarily, in open-water areas not currently designated as DAs.

    Response: The USACE agrees.

2. Rock armoring along the GIWW and FWB should be placed no higher than 3.5 feet and 5 feet NAVD88, respectively, and rock should be placed no higher than 3 feet NAVD88 along open-water bay DAs.
    Response: The USACE agrees.

3. Between TY-3 and TY-5, “fish dips” or gaps should be created in rock armoring at the mouth of all bayous, trenasses, open water, etc., or at strategic locations recommended by the HET.
    Response: The USACE agrees.

4. Under their Section 7(a) responsibilities of the ESA, the Corps should convert a 100-acre site adjacent to the southern boundary of the 343-acre SUD on the west bank of Commercial Canal (Figure 4) to high quality bottomland hardwoods through a one-

time spoil disposal event with a target disposal elevation no higher than 4 feet NAVD88; appropriate bottomland hardwood species should be planted in consultation with the Service, and a non-developmental easement should be purchased to retain the created habitat value for the life of the project.
Response: The USACE agrees that opportunities to improve Louisiana Black Bear habitat should be explored further.

5. The Commercial Canal DA should be surveyed for potential Louisiana black bear den trees in coordination with the Service.
Response: The USACE agrees.

6. Material excavated from the FWB Bar Channel should be placed west of that channel and as near to the Gulf shoreline as practical.
Response: The USACE agrees.

7. All dredge material not needed for the structural integrity of the bypass structure should be used beneficially.
Response: The USACE agrees.

8. Periodic monitoring of protective rock and mitigation sites should be conducted in cooperation with the Service and other natural resource agencies.
Response: The USACE agrees.

9. Mitigation lands should be dedicated in perpetuity to fish and wildlife purposes through fee title acquisition or placement of non-developmental easements of those lands.
Response: The USACE agrees using the assumption that lands rights associated with the State of Louisiana and private interests can be resolved prior to construction.

10. Modification, addition, and/or elimination of project elements during future project planning and construction stages should be fully coordinated with the Service and other natural resource agencies to ensure the continued validity of our impact analysis and mitigation recommendations.
Response: The USACE agrees.

11. The Corps should continue to coordinate with the Service throughout planning and construction to ensure that the proposed project does not impact waterbird nesting colonies, and threatened or endangered species that may be listed in the future.
Response: The USACE agrees.

12. Project features should be implemented and operated consistent with the Louisiana Coastal Restoration Plan, as required by Section 303(d) of CWPPRA.
Response: The USACE would comply with this recommendation.

13. Given the extremely high degree of interdependency between the Port of Iberia project and the recently proposed Port of West St. Mary project, their cumulative impacts and consistency of design, construction, operations, and maintenance should be fully evaluated to ensure that they are implemented in the most environmentally sensitive manner feasible.
Response: The USACE agrees.

7.2 RELATIONSHIP TO ENVIRONMENTAL PROTECTION LAWS AND REQUIREMENTS

This chapter documents the coordination and compliance efforts regarding statutory authorities including environmental laws, regulations, Executive Orders (EO), policies, rule, and guidance.

Following completion of the final EIS (FEIS), the Assistant Secretary of the Army for Civil Works will issue a written Record of Decision (ROD) concerning the proposed action. The ROD will be issued within a framework of laws, regulations, and EOs. These authorities establish regulatory compliance standards for environmental resources that pertain directly to USACE management of water resources development projects, or provide planning guidance for the management of environmental resources. Relevant Federal and State of Louisiana statutory authorities are listed in **table EIS 7-1**.

Full compliance with statutory authorities will be accomplished upon review of the FEIS by appropriate agencies, the public, and the signing of a ROD.

7.2.1 EO 11988, Floodplain Management

Deals with avoiding or minimizing adverse impacts associated with the base floodplain unless there are no practicable alternatives. The RP would be implemented within the 100-year floodplain because there are no practicable non-floodplain alternatives. No increase in potential harm to people or property in the floodplain would be expected from implementation of the RP.

7.2.2 EO 11990, Protection of Wetlands

This EO has played an important role in project planning. Alternatives considered would affect wetlands to some degree, but the net effect would be positive. These beneficial effects are anticipated from use of dredge material to develop productive wetlands and to reduce erosion of brackish and intermediate marshes.

7.2.3 EO 12898, Environmental Justice (EJ)

EJ issues were considered throughout the Port of Iberia Channel Deepening Study process. There is always the possibility that some environmental changes resulting from any implemented project would be more relevant to particular groups or communities

than to others. However, in the Port of Iberia Channel Deepening Study, no direct or indirect impacts from the RP that would affect any particular low-income or minority population were identified. The CE-MVN is committed to ensuring that any potential EJ issues are addressed as implementation of the RP proceeds. As part of this process, we encourage any interested parties to participate by informing us of potential concerns and by participating in the Port of Iberia study process in general.

7.2.4 Endangered Species Act of 1973

The National Marine Fisheries Service (NMFS) and the United States Fish and Wildlife Service (USFWS) identified endangered and threatened species that may occur in the study area. The CE-MVN has determined, based on the Biological Assessment (BA) contained in appendix B, that the RP may impact, but not likely adversely, the existence of any endangered or threatened species or their critical habitat. Concurrence with USFWS and NMFS will be accomplished through the completion of the review of the BA.

7.2.5 Clean Water Act Section 404 (b)(1) Evaluation

A Section 404(b)(1) evaluation has been prepared for the RP and is contained in appendix B. The CE-MVN has determined, based on Section 404(b)(1) guidelines, which the recommended sites and methods for dredge material disposal comply with the requirements of these guidelines, if appropriate and practical conditions to minimize pollution and adverse impacts to the affected aquatic ecosystem are included.

7.2.6 Clean Water Act Section 401 State Water Quality Certification

The CE-MVN did apply for a State Water Quality Certificate from the LDEQ pursuant to Section 401 of the Clean Water Act although an exemption to this procedure is allowed by Section 404(r) of the Act, upon completion of a DEIS. The LDEQ, Office of Water Resources was coordinated with through public mail-out of the DEIS. Water Quality Certificate JP 050913-02/AI 10123/CER 20050017 was issued for the project in October 2005. See letter 8 in Appendix G. CE-MVN does not intend to seek an exemption under 404(r).

7.2.7 Coastal Zone Management Act

A Coastal Zone Management Program (CZM) consistency determination has been prepared for the RP. The CE-MVN has determined, based on the Coastal Use Guidelines, that the RP is consistent, to the maximum extent practicable, with the State of Louisiana's approved Coastal Management Program. The Consistency Determination is provided in appendix B**,** section 5. The State of Louisiana provide a letter dated October 24, 2005 (Appendix G Letter 13) that states: *"The submission of a Consistency Determination at the Feasibility stage of project development would seem to be somewhat premature; CMD will consider this to be a "phased consistency" as described in NOAA regulations at 15 DFR 930.36(d). As new information on this project is*

developed and plans are modified, a Consistency Determination will be required for each major decision."

Table EIS 7-1 shows the Federal laws, executive orders, and state laws that apply to this study and the status of compliance with each.

Table EIS 7-1
Relevant Federal Statutory Authorities and Executive Orders
(Note: this list is not complete or exhaustive)

Federal
Abandoned Shipwreck Act of 1988
Archeological and Historic Preservation Act of 1974
Bald Eagle Act
Clean Air Act, as amended
Clean Water Act of 1977, as amended
Coastal Zone Management Act of 1972, as amended
Coastal Barrier Resources Act of 1982
Coastal Barrier Improvement Act of 1990
Endangered Species Act of 1973, as amended
Estuary Protection Act
Farmland Protection Policy Act
Federal Water Project Recreation Act, as amended
Fish and Wildlife Coordination Act, as amended
Floodplain Management (Executive Order 11988)
Food Security Act of 1985
Land and Water Conservation Fund Act of 1965, as amended
Marine Protection, Research, and Sanctuaries Act of 1972
Magnuson –Stevens Fishery Conservation and Management Act
National Environmental Policy Act of 1969, as amended
National Historic Preservation Act of 1966, as amended
Prime and Unique Farmlands, 1980 CEQ Memorandum
Protection of Children from Environmental Health Risks And Safety Issues (Executive Order 13045)
Protection and Enhancement of the Cultural Environment, 1971 (Executive Order 11593)
Protection of Wetlands (Executive Order 11990)
River, Harbor, and Flood Control Act of 1970
Water Resources Development Acts of 1976, 1986, and 1990
Wild and Scenic River Act, as amended
State
Air Control Act
Archeological Treasury Act of 1974 as revised
Louisiana State and Local Coastal Resources Management Act of 1978
Louisiana Natural and Scenic Rivers System Act
Protection of Cypress Trees
Louisiana Water Control Act

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CHAPTER 8 LIST OF PREPARERS

The following persons were primarily responsible for preparation of the EIS:

NAME	DISCIPLINE/ EXPERTISE	EXPERIENCE	ROLE IN PREPARING EIS
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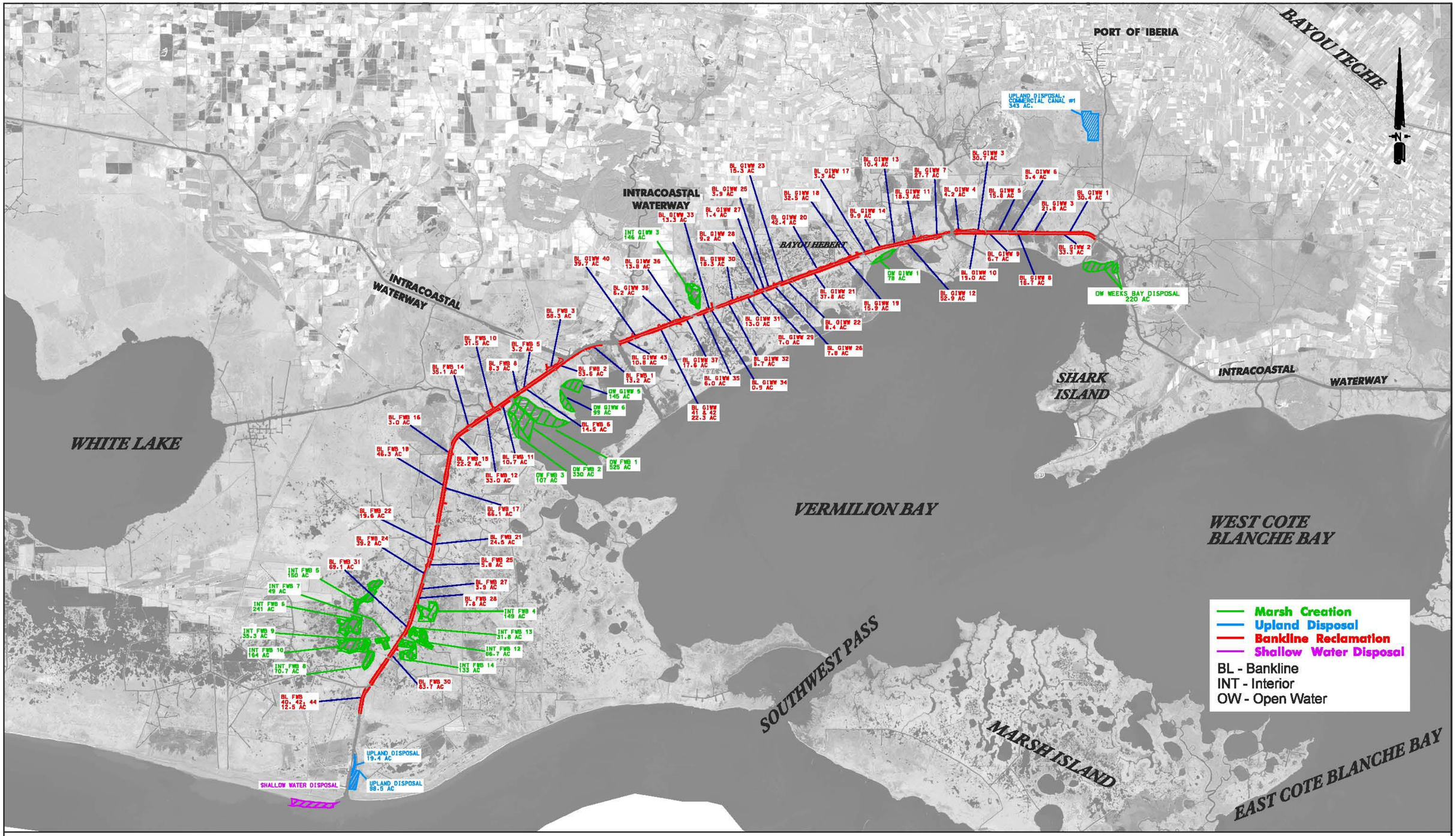
CHAPTER 10 LIST OF ACRONYMS AND ABBREVIATIONS

AAHU	Average Annual Habitat Units
AGMAC	Acadiana Gulf of Mexico Access Channel
BA	Biological Assessment
BCR	Benefit to Cost ratio
BLH	Bottomland hardwood (such as red maple, green ash, oak, and American elm)
BTNEP	Barataria Terrebonne National Estuaries Program
CAP	Continuing Authorities Program
CE-MVN	US Army Corps of Engineers-Mississippi Valley Division, New Orleans District
CFR	Code of Federal Regulations
CWPPRA	Coastal Wetland Planning Protection and Restoration Act
CZM	Coastal Zone Management
DA	Disposal Area
DEIS	Draft Environmental Assessment
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
EJ	Environmental Justice
EO	Executive Order
ER	Engineering Regulation
FDEP	Florida Department of Environmental Protection
FM	Fresh Marsh
FWB	Freshwater Bayou
GIS	Geographic Information System
GIWW	Gulf Intracoastal Waterway
GMFMC	Gulf of Mexico Fishery Management Council
GRBO	Gulf Region Biological Opinion
HET	Habitat Evaluation Team
HTRW	Hazardous, Toxic, and Radioactive Wastes
IM	Intermediate Marsh
IWI	Index of Watershed Indicators
LA	Louisiana
LADNR	Louisiana Department of Natural Resources
LADOTD	Louisiana Department of Transportation and Development
LAWQI	Louisiana Water Quality Inventory
LCA	Louisiana Coastal Area
LDEQ	Louisiana Department of Environmental Quality
LDWF	Louisiana Department of Wildlife and Fisheries
LSU	Louisiana State University

LUMCON	Louisiana University Marine Consortium
MB	Mermentau Basin
MLG	Mean Low Gulf
MRW	Mississippi River Watershed
MSFCMA	Magnuson-Stevens Fishery Conservation and Management Act
N/A	Not Applicable
NAAQS	National Ambient Air Quality Standards
NAVD	North American Vertical Datum
NED	National Economic Development
NEPA	National Environmental Policy Act
NER	National Ecosystem Restoration
NGVD	National Geodetic Vertical Datum
NMFS	National Marine Fisheries Service
NOAA	National Oceanic Atmospheric Administration
NRCS	Natural Resource Conservation Service
P&S	Plans and Specifications
PCB	Polychlorinated Biphenyls
RP	Recommended Plan
SA	Study Area
SAV	Submerged aquatic vegetation
SHPO	State Historic Preservation Office
SLAM	State and Local Air Monitoring Station
SPMS	Special Purpose Air Monitoring Station
SUD	Sacrificial upland disposal
T&E	Threatened and endangered species
TEL	Threshold Effects Level
TVD	Teche/Vermilion Basin
TY	Target Year
US	United States
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
USFWS	United States Fish & Wildlife Service
WC	Wind Current
WRDA	Water Resources Development Act
WVA	Wetlands Value Assessment

CHAPTER 11 EIS MAILING LIST

All U.S. Senators and Congressmen representing Louisiana and Federal and state agencies, state officials, local officials, interested groups, libraries, and individuals listed below have been sent copies of the EIS or a notice of its availability.



NOTE: 2001 USGS AERIAL PHOTOGRAPHY
BACKGROUND - SATELITE IMAGERY

SCALE IN FEET

PROJECT AREA - DISPOSAL AREA MAP
ACADIANA GULF OF MEXICO ACCESS CHANNEL (AGMAC)
PORT OF IBERIA

PLATE EIS-1